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# Y Cymmrodor.

## THE MAGAZINE

OF THE HONOURABLE

## SOCIETY OF CYMMRODORION.

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VOL. XLI.

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# HOLT, DENBIGHSHIRE:

## The Works-Depôt of the Twentieth Legion at Castle Lyons.

By W. F. GRIMES, M.A.

*(Department of Archæology, National Museum of Wales).*

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# HOLT, DENBIGHSHIRE:

## TWENTIETH LEGION AT CASTLE LYONS.

# EDITORIAL NOTE.

On the thirteenth of January, 1911, at a meeting of the Honourable Society of Cymmrodorion, with Principal Sir John Rhys, M.A., D.Litt., in the chair, Mr. T. Arthur Acton, of Wrexham, who had been engaged for several years in carrying out at his own expense extensive excavation and research work in connection with the Roman Settlement on the banks of the Dee at Holt in Denbighshire, gave a preliminary account of the result of his investigations up to that date. Apart from a communication that appeared in the *Archæologia Cambrensis* for 1906 (vi. 6, 238), little or nothing was known of the site until Alfred Neobard Palmer, the author of *The History of Wrexham and the Neighbourhood*, called attention to it (see pp. 4, 5 of this volume), and later on induced Mr. Acton to undertake a more or less systematic exploration of the ground.

It was hoped (see *Transactions of the Honourable Society of Cymmrodorion*, Session 1910–1911) that it might be possible to produce an extended report of Mr. Acton's observations and "finds," for publication in *Y Cymmrodor*, Mr. Acton undertaking to place the whole of his material at the disposal of the Society. Unfortunately adverse circumstances intervened, and the project fell through. By great good fortune the bulk of the material collected by Mr. Acton (who died in 1925, before he was able to complete the arrangement of the collection) came into the possession of the National Museum of Wales.

Soon after Mr. Acton's death the work of dealing with the "Holt Collection" was entrusted to Mr. W. F. Grimes, M.A., Assistant Keeper of Archæology at the Museum.

The Council of the Honourable Society of Cymmrodorion (bearing in mind the proposals for the earlier publication of a Report), when the Director of the Museum and Mr. Grimes called their attention to the present work, authorized the Editor to arrange for its inclusion amongst the Society's Publications and readily undertook to bear the necessary

expense. It is a pleasure to them to include " Castle Lyons " in the list of valuable works of a similar character produced at the Society's cost, notably Professor Haverfield's " Military Aspects of Roman Britain," and Dr. Wheeler's " Segontium, and the Roman Occupation " and " The Roman Fort near Brecon."

In submitting this volume to the members of the Society and the public, the Council desire to express their cordial thanks to the authorities of the National Museum of Wales and to the Director, Dr. Cyril Fox, for the opportunity placed at their disposal, and particularly to Mr. W. F. Grimes for the painstaking devotion shown by him in the preparation of the work. They congratulate Mr. Grimes upon the distinction conferred upon him by the University of Wales, when he presented this Report as his Thesis for the degree of M.A.

Finally they desire to thank very heartily the Right Hon. Sir John Eldon Bankes, the Right Hon. Sir Herbert Lewis, and Mr. Henry Neville Gladstone for the donations which they have added to the General Funds of the Society in order to ensure the publication of this volume.

*On behalf of the Council,*

E. Vincent Evans,
*Honorary Secretary and Editor.*

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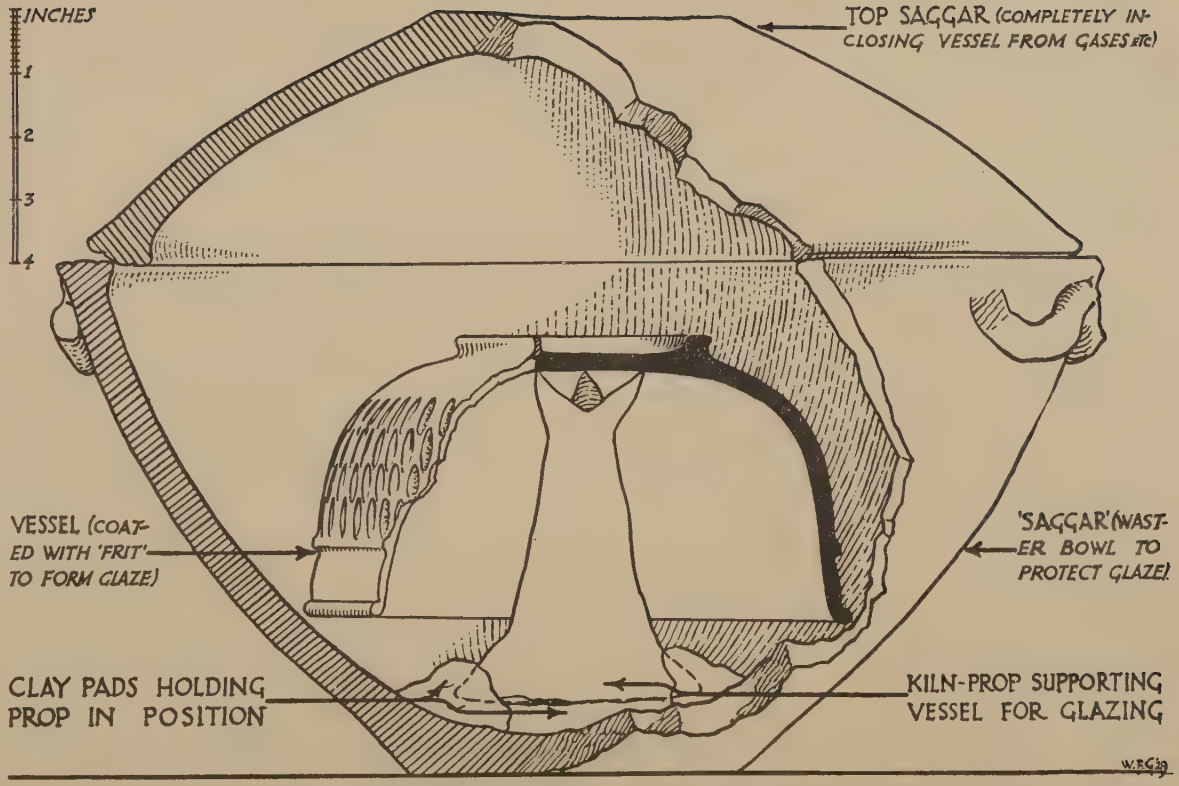



Reconstruction of the method of firing green-glazed wares at Holt. (See p. 182).

*Frontispiece.*

# Holt: the Works-Depot of the Twentieth Legion at Castle Lyons.

By W. F. GRIMES, M.A.

## PREFATORY NOTE.

By Cyril Fox, Ph.D., F.S.A.

*Director of the National Museum of Wales.*

The appearance of the report on the Roman site at Holt some fifteen years after its excavation is due to special circumstances.

As explained in the first section following, the examination of the site was undertaken by the late T. Arthur Acton, F.S.A., following its rediscovery by A. N. Palmer, in 1907. The work was continued for eight years, until 1915, the expense being borne by the excavator, but no report had appeared ten years later, when the material now known as the Holt Collection was acquired by the National Museum of Wales. The arrangement whereby Mr. Acton was to have worked over the material at Cardiff was upset by his illness and death a few months later, in 1925.

The Holt Collection forms the first accession on the Registers of the National Museum of Wales for the year 1925. With the exception of a small collection presented by Mr. Acton to the Wrexham Museum, it comprises, as far as is known, all the material of any value derived from the Acton excavations, including photographic negatives, plans, and models of certain of the kilns. Attempts made immediately after the excavator's death, and also since, have failed to trace any of his notes of the work, and some of his plans also seem to have disappeared.

The task of preparing the present report was entrusted to Mr. W. F. Grimes, Assistant Keeper of Archæology, early

in 1927. Its main basis is, of course, the material already described. But for additional information Mr. Grimes wishes me to express his thanks to the following :

Mr. Joseph Burton, of Pilkington's Tile and Pottery Company, Manchester, for information on structural details of the kilns ;

Mr. E. F. Davies, architect and surveyor, of Wrexham, on whose drawings the plans illustrating the report are based, for information on details in the plans ;

Mrs. H. C. Frater, of Wrexham, for facilities to examine photographs, correspondence, etc., in her possession ;

Professor Robert Newstead, F.R.S., of Chester, for photographs and other material, including tracings of some original plans now lost ;

Mr. Heywood Sumner, F.S.A., for the loan of correspondence and photographs ; and

Miss M. V. Taylor, F.S.A., for facilities to examine the Acton correspondence in the Haverfield Library, Oxford.

The only other sources of value are the late Professor Haverfield's articles in *Roman Britain in* 1913 and *Roman Britain in* 1914 respectively, and the account of the site in the *Denbighshire Inventory, Royal Commission on Ancient Monuments in Wales.* Haverfield's work in particular has been of use, as an able summary of the results of the excavation.

The meagreness of the available evidence has influenced Mr. Grimes' treatment of his subject, especially in its chronological aspects. The almost complete absence of labels on the objects, and of records of association or stratification has rendered the coins, pottery, etc., of value only for general purposes in dating the site ; it has been impossible to determine the active life of individual structures, or to define the periods of the occupation with any degree of preciseness. The dating of the objects themselves, and particularly the pottery, has had for the same reason to be based on typology, without the safeguards which should have been supplied by the site itself. So, too, in the description of the buildings, absence of details in some cases is due either to the incompleteness of the photographic or other records, or to uncertainties in the available information which cannot now be cleared up.

The photographs illustrating structural features are selected from those taken during the work under Mr. Acton's direction. They are the best available for showing the points chosen for illustration. The plans are based on the original plans made for Mr. Acton by Mr. E. F. Davies ; these, like

all the other line drawings illustrating the report, are Mr. Grimes' own work.

The report proper consists of five sections, dealing with Holt in the literature ; the site ; its place, historical and economic, in the Roman occupation ; a study of Romano-British kiln-types and a list of pottery sites ; and the classified catalogue of finds. There are also appendices dealing with plant and animal material, and with a Bronze Age burial found during the excavations. The catalogue of finds deals in all with some 800 items, many of which consist of as many as twenty or thirty objects. A selection of these is exhibited, and the remainder stored, in the National Museum.[1]

Acknowledgement for help other than that mentioned above is made in the appropriate places in the report. But Mr. Grimes is particularly grateful to his colleagues for assistance on technical points as follows :

Mr. H. A. Hyde, M.A., F.L.S., for the Appendix on the Plant Material ;

Mr. L. F. Cowley, M.Sc., for the Appendix on the Animal Remains ;

Dr. F. J. North, F.G.S., and Mr. W. E. Howarth, F.G.S., for information on geological points ; and

Mr. V. E. Nash-Williams, M.A., F.S.A., for help and advice generally.

He is also deeply grateful to Sir Arthur Keith, F.R.S., for a report on the human remains from the Bronze Age burial (Appendix III).

Finally, the thanks of all interested in Romano-British archæology are due to the Council of the Honourable Society of Cymmrodorion and to Sir Vincent Evans for the generous and ready way in which they have undertaken the necessarily expensive task of publication on a scale worthy of a site which is (at present) in many ways unique in the Roman Empire.

*Postscript.*—The report was submitted in 1930 by Mr. Grimes to the University of Wales as a thesis for the degree of M.A. ; the degree has been awarded with distinction.

[1] This catalogue is correlated with the Museum catalogue by the addition to each item, of the number (in brackets) which that item bears in the Museum Register under the Accession Number 25.1. This will enable a given object to be readily produced when required from the Museum storerooms, a point of some importance in the case of a manufacturing site the distribution of whose products can only be satisfactorily determined by the study of fabric and other aspects of technique, as well as of form.

## I—HOLT IN THE LITERATURE.

### 1. Bibliography.

As far as is known, no mention of the Roman site is made in the ancient authorities. The second Antonine Itinerary gives a site *Bovium* as being ten miles from Chester on the road to Wroxeter, and the probable identity of Holt and *Bovium* is discussed below.

The literature has been fully treated by the late A. N. Palmer, whose researches first led to the rediscovery of the site (see footnote [3] below). For the sake of completeness it is dealt with only briefly here.

Roman remains were first recorded at Holt in the early seventeenth century, when a local landowner named Crue or Crewe unearthed Roman masonry on his land. A description of this discovery is preserved in letters in the British Museum Harleian MSS.[1] W. T. Watkin construed the structure as part of "the residence of one connected with the Twentieth Legion", and, relying on the similarity of names, located it at Crewe, across the River Dee from Holt.[2] The actual site of the discovery, however, was first identified by Palmer, who placed it in fields to-day known as the Wall Lock and Hilly Fields, on the left bank of the Dee, north of the town of Holt.[3]

But no local tradition relating to Thomas Crewe's finds remained, and even the location of the house was lost (although Norden's *Survey of Holt* of 1620 A.D. preserved the important fact that a Thomas Crewe who lived near Holt Bridge possessed lands which included the "Wallock" and the "Stonie Croft",[4] the latter perhaps being the "Hilly Field"). Later references to Holt as a Roman site appear to be based on other more uncertain evidence.

Thus Pennant states of Holt that it had originally been a small outpost of Deva, basing this statement apparently only on "slopes and other now almost obsolete works" which he saw there, and regarding the matter as proved by the coins which had been found. Among them he mentions "some of *Antoninus*, *Galienus*, *Constantine*, and *Constantius*", but no definite provenance is given for the coins, and since the works are stated to be "near the castle and on the opposite side of

[1] B.M. Harleian MSS., Vol. 2014, fol. 31 and Vol. 2111, fol. 21.

[2] *Roman Cheshire* (1886), p. 305.

[3] "The Town of Holt, in County Denbigh," Chap I (*Arch. Camb.*, 1906, pp. 217–40). The letters, addressed to Randle Holme III, are transcribed in full as an appendix to this chapter.

[4] Palmer, *op. cit.*, Chap. III (*Arch. Camb.*, 1907, pp. 412–13).

the water", it is doubtful whether Pennant's statements apply to the present site.[1] Lewis in his *Topographical Dictionary* [2] follows Pennant.

As already stated, W. T. Watkin was disposed to place a villa, "probably the residence of one connected with the Twentieth Legion", at Holt or Crewe, and considered also that Holt Castle may have stood on the site of a former Roman fort, the "villa" at Crewe being the residence of its commander.[3]

Horsley "had some thoughts" of a station at Holt Castle, but gave up the idea owing to lack of evidence.[4] Ormerod speaks of a "Roman post at Holt",[5] but it seems likely that when he states that a (probable) road fords the Dee "immediately *under* the Roman post at Holt", he is following Pennant in placing the post at or near Holt Castle.[6]

A. N. Palmer, however, by a study of all the evidence, located the site some distance to the north of Holt Castle, and succeeded also in obtaining some inkling of the character of the settlement the excavation of which was commenced by the late T. Arthur Acton, F.S.A., of Wrexham, in 1907.

The excavation was continued for some seven years until 1914 or 1915, the work being carried out entirely at the excavator's own expense. But circumstances prevented the preparation of his report, and the material recovered was handed over to the National Museum of Wales in 1924, only a few months before Mr. Acton's death.

Of his work necessarily brief accounts have been published by Haverfield in *Roman Britain in* 1913 and *Roman Britain in* 1914 respectively.[7] The site is also described briefly, but with inaccurate plans, in the *Denbighshire Inventory* of the Royal Commission on Ancient Monuments in Wales and Monmouthshire (pp. xiv–xv, and no. 237), and these accounts have formed the basis of all others.[8]

## 2. The Name Castle Lyons.

The derivation of the name *Castle Lyons* has also been dis-

[1] *Tours in Wales* (1810), Vol. i, p. 274. [2] *s.v.* "Holt" (1833).
[3] *Op cit.*, pp. 305–6. [4] *Britannia Romana* (1732), p. 416.
[5] *History of Cheshire* (2nd ed., 1882), i, p. XLVIII.
[6] *Op. cit.*, iii, p. 584.
[7] Supplementary Papers to the *Proc. of the British Academy.* The 1914 account was reprinted with slight alterations in *Arch. Camb.*, 1916, pp. 222–34. The graffiti, etc., have been published also by Haverfield in *Ephemeris Epigraphica*, ix, fasc. iv.
[8] Since the above was written the latest account of the site has appeared in Ellis Davies, *The Prehistoric and Roman Remains of Denbighshire*, pp. 145 ff. (1929).

cussed by Palmer (*op. cit. supra*, p. 4) and needs only a brief reference here.

The suggestion that *Castle Lyons* is derived from *castra legionum* through *castrum leonis* and other medieval names has received the support of Sir John Rhys and other philologists. The earliest recognition of the origin of the medieval names seems to be due to Camden,[1] and the same explanation is given by Pennant[2] and Lewis.[3] The one difficulty, however, appeared to be that there was no evidence for the use of the Welsh form *Caerlleon* to designate Holt—on the contrary, that this name for Welsh bards and writers in every case signified Chester.

This difficulty was finally overcome after the publication of the first chapter of Palmer's history of Holt already referred to, by the discovery, made by Mr. Edward Owen, of a case of the Welsh name "Caerleon" applied to Holt Castle in an early fourteenth-century licence of Edward II.[4] The one gap in the chain of evidence for the derivation of *Castle Lyons* is thus filled by this record. Previous to its discovery the difficulty had been met by the theory that *Caerlleon*, though the classical name for Chester, was first applied to Holt, Deva having been first established at Holt and later removed to Chester. But excavation has in any case dispelled this view. In the first place, Holt is now known not to have been a military site in the sense of a fortress, but a works-depôt subordinate to the legionary fortress at Chester; and secondly, the datable evidence in any case clearly postulates a later date for the founding of Holt than for that of Chester.

### 3. Castle Lyons and Bovium.

On present evidence there seems little doubt of the identity of Castle Lyons with the *Bovium* of the Antonine Itinerary, although other places on the line of the road from *Deva* to

[1] Camden, W., *Britannia* (1637), p. 677: "Neere unto it [Wrexham] is *Leonis Castrum* happily so called of the twenty Legion denominated *Victrix*, which a little higher on the other bank of *Dee* lay garrisoned; now it goeth commonly under the name of *Holt*. . . ." (Also Gibson's ed., 1722, ii, p. 820.)

[2] *Op. cit.*, i, p. 274.

[3] *Top. Dict. Wales*, s.v. "Holt."

[4] See Chapter II of Palmer's article, *Arch. Camb.*, 1907, p. 10. The licence was given in 1319 by Edward II to Thomas, Earl of Lancaster, to hold certain castles in Bromfield and Yale, including that of "Caerleon" [Holt] which the second John de Warenne, Lord of Bromfield and Yale, had granted to the king with the remainder of his possessions, in 1316.

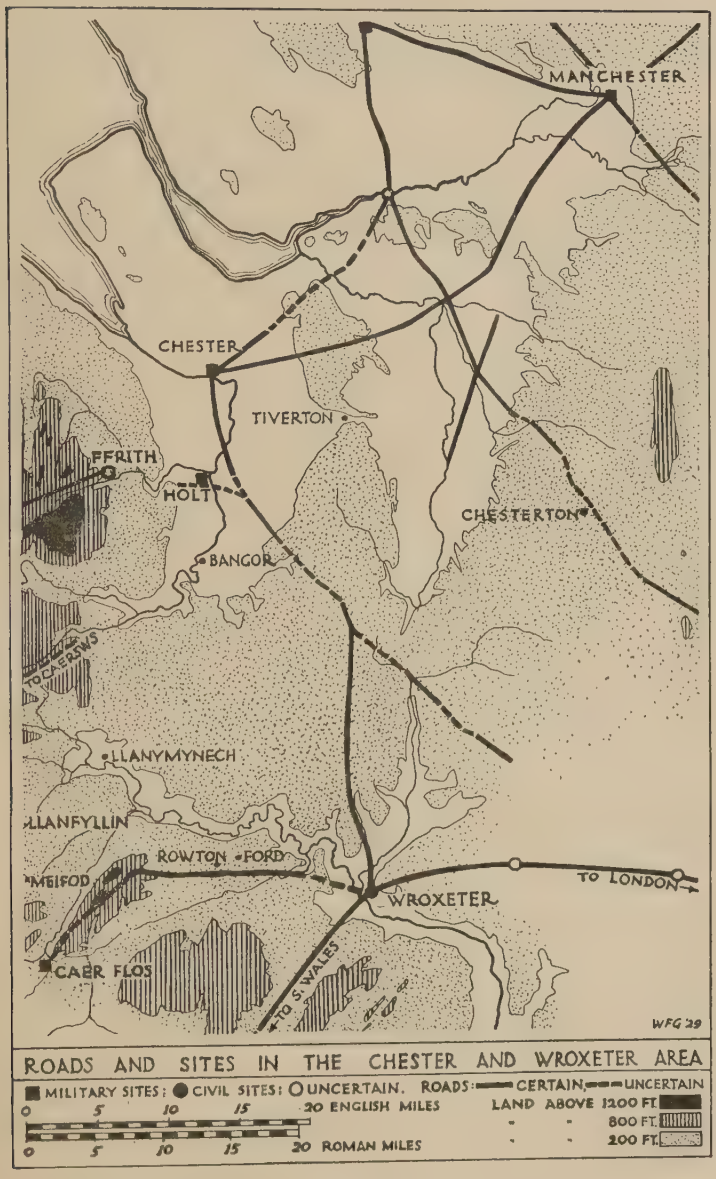

MANCHESTER
CHESTER
TIVERTON
FFRITH
HOLT
CHESTERTON
BANGOR
TO CAERNS
LLANYMYNECH
LLANFYLLIN
ROWTON FORD
MELFOD
TO LONDON
WROXETER
CAER FLOS
TO S. WALES
WFG 29
ROADS AND SITES IN THE CHESTER AND WROXETER AREA
MILITARY SITES; CIVIL SITES; UNCERTAIN. ROADS: CERTAIN, UNCERTAIN
0 5 10 15 20 ENGLISH MILES
LAND ABOVE 1200 FT.
800 FT.
200 FT.
0 5 10 15 20 ROMAN MILES

Fig. 1.

*Viroconium* have yet to be located. The part of Iter II (*A uallo ad portum Ritupas*) relative to the present problem runs :

| | |
|---|---|
| DEVA LEG XX VICT | |
| BOVIO | MP X |
| MEDIOLANO | MP XX |
| RVTVNIO | MP XII |
| VIROCONIO | MP XI |

The problem has formed the centre of a number of discussions, which need not be considered here. Like others of its kind, it has produced theories in which the few available facts have been treated with the usual excess of imagination, if not with complete disregard. The roads themselves are still incompletely known ; the exact character of few, if any, of the sites along them has been determined by excavation, and their existence is only known by the quite uncertain evidence of chance finds of pottery, coins, and the like.[1]

It can at least be said of Holt that the mileage between Chester and Holt agrees exactly with that given by the Itinerary as the distance between *Deva* and *Bovium* ; and an important military works-depôt which was probably working at the time of the compilation of the Itinerary would have been a likely place to figure in such a list.

[1] The variety of the theories is some indication of the sparseness of the evidence. The chief sites suggested are marked on the accompanying map, Fig. 1, and a brief list—which has no pretensions to completeness—is appended. The sites suggested for *Bovium*, *Mediolanum*, and *Rutunium* are listed from north to south in that order. W. Camden (*Britannia*, 1637), Bangor-on-Dee, " between Llanfyllin and Alcester ", Rowton Castle ; Camden (Gibson's edn., 1722) as in 1637 edn., with Meifod, near Llanfyllin, for Mediolanum ; T. Gale (*Antonini Itinerarium*, 1709), Bangor-on-Dee, etc., as Camden ; J. Horsley (*Britannia Romana*, 1732) near Stretton ; near Drayton (adding 10 miles to the Condate–Mediolanum distance, Iter. X) or near Whitchurch (subtracting 10 miles from the Bovium–Mediolanum distance, Iter. II), both with some doubt ; near Wem on the River Rodan (noting the similarity between Rutunium and Rodan) ; Ormerod (*History of Cheshire*, 2nd edn., 1882) speaks of " a Roman post at Holt ", but attempts no identification of the places on the Iter ; W. T. Watkin (*Roman Cheshire*, 1886), Tiverton and Chesterton (*Rutunium* lying outside Cheshire, is not discussed) ; H. E. Forrest (*Caradoc F.C. Trans.*, vii, 244), Holt, Llanymynech Rowton Castle or Ford ; T. Pope (*N. Staffs. F.C. Trans.*, lxiii (1929), 108–10), near Stretton, Hales (nr. Drayton), Moston. In some cases to overcome the discrepancy between Iter II and Iter X two places bearing the name *Mediolanum* are postulated, *e.g.* Clawdd Goch (Iter II) and Chesterton (Iter X), by the Bishop of Cloyne (Watkin, *Roman Cheshire*, p. 20).

Fig. 2.
(The line of the road is that given in the excavator's original plan; the evidence for it is not known.)

*To face p. 9.*

## II.—DESCRIPTION OF THE SITE.

### 1. The Site and its Environs.

The Roman works-depôt lay on the left bank of the River Dee, about half a mile north-west of the village of Holt (O.S. 6-inch Sheet, Denb. 22 S.E.). The area forms part of the great Cheshire plain and rises nowhere much above the 50 foot contour-line until it reaches the mountains of Flintshire and Denbighshire in the west. The buildings excavated covered two fields, the Wall Locks and the Hilly Field, an area of approximately 20 acres. The ground here shows a more or less gradual slope downwards from the 50-foot line, towards the alluvial meadows which flank the River Dee in this part to a width of some 100 to 150 yards (*see* site-plan, Fig. 2). The sloping ground is defined on the river side by a slight bank of varying height which separates it from the meadows, and on the north and west by the brook Devon which flows into the Dee about half a mile further north.

Geologically [1] the site is established on an outcrop of Triassic (Bunter) sandstone, overlaid with boulder-clay. It is possible that the foot of the slight bank mentioned above, along the margin of which some of the buildings were erected, may represent the limit of the River Dee in Roman times. Between the site and the alluvial meadows were found definite indications of a ditch or hollow which attained a depth of at least 9 feet,[2] and which was thought by Acton to be either the actual channel of the Dee at this time, or, alternatively, an artificial "cut" made by the Romans for purposes of transport. It is at least possible that the river did not then follow its present straight course, and the theory is borne out by the fact that in times of flood to-day the water follows a somewhat similar channel, along the edge of the bank, returning to the modern bed below Holt Bridge (*see* Fig. 3). Large quantities of pottery were recovered from the "ditch" in the course of excavation, probably indicating that the channel had been used by the Romans as a convenient place for the dumping of rubbish and pottery-waste.

The result of the excavations was to reveal an elaborately planned industrial settlement for the manufacture of tiles and pottery, and the reasons for the choice of this site at Holt,

[1] On this, as on other geological points, my grateful thanks are due to Dr. F. J. North and to Mr. W. E. Howarth, of the Department of Geology in the National Museum of Wales, for much information.

[2] Acton Letters in Haverfield Library, Ashmolean Museum, Oxford (referred to hereafter as *Acton Letters*), 18.2.1911.

already referred to by Haverfield (*op. cit. supra*, p. 5) may be mentioned here.

From the practical point of view the choice was admirably made, ensuring as it did a ready supply of raw materials and fuel, and excellent facilities for transport and communication.

Building-stone was available and readily accessible in the outcrops of the red Bunter sandstone which occur on both sides of the River Dee, at Farndon and south of the site near Holt Hill. This material was used throughout for the buildings, in some cases in blocks of considerable size, which would not have been brought any great distance.

The raw materials for pottery and tile-making were supplied by the local clays, which have been used for this purpose throughout all periods, from prehistoric times.[1] For certain products non-local clays (*i.e.* clays not derived from the *immediate* neighbourhood) were apparently employed, but the use of " imported " clay was limited (see below, p. 163). Samples of clays in the raw state from the workshops were submitted to Dr. North and Mr. Howarth for examination. They are stated to be alluvial clay, derived probably from the Keuper marl beds some seven miles away, to the south.

The Holt site therefore resembles the more modern pottery works at Ewenny and Rhymney, Glamorgan, in that use was made of alluvial deposits, rather than true boulder-clay. The latter is a much more variable material and is frequently unsuited for pottery-making without extensive levigation. Neighbouring fields to the south and south-east show traces of hollows which were thought by the excavator to have been the clay-pits belonging to the works. This conclusion is in all probability correct, but it does not appear to have been actually tested by excavation (see below, p. 41).

Fuel for the kilns was ready at hand in the vast oak forests which the clay soil of the Cheshire plain everywhere supported.[2] In the samples of charcoal available for examination (see Appendix I, below) the greater portion are of oak, while hazel and ash are also represented. Cherry and other woods, and especially gorse, in large quantities, are also said to have been used,[3] although examples of charcoal from these woods are not preserved.

[1] A Bronze Age urn-burial was discovered within a few yards of the outer wall of the barracks (*see* site-plan, Fig. 2, and below, Appendix III, p. 187).

[2] The former existence of these forests is testified in many of the place-names (*e.g.* Holt itself, Allington-y-coed, etc.) of the area.

[3] *Acton Letters*, 23.4.15.

Fig. 3.—The site, from above Holt Bridge. The River Dee is seen flooding the presumed old channel to the left below the site. The hills of Flintshire and Denbighshire are faintly visible in the distance.

*To face p. 10.*

The choice of the site allowed ample provision for transport both by road and by water, although the probability is that the latter method was the more generally used.[1] By river, Holt is some 12 miles from Chester, and the transport downstream of pottery and building materials would have been at once quick and easy. On the other hand, although the works were situated at no great distance from the roads, land transport—at least as far as goods destined for the legionary fortress were concerned—was probably a much more difficult and troublesome business. The main road from Wroxeter to Chester runs some 1½ miles to the east of Farndon. A second road in all probability ran past the Holt site, crossing the Dee at the ancient ford just above Holt Bridge, and so on, along the line of the modern road through Farndon to join the Chester-Wroxeter road at Morrislake Bridge.[2] By this route, Holt is roughly ten miles distant from Chester, but the troublesome task of transporting heavy articles across the two fords at Aldford and Holt itself together with the obvious convenience of the waterway, probably resulted in the land route to Chester being used only in time of emergency, when for any reason river-transport was not available. The present evidence makes it difficult to determine how far Holt products were distributed to sites other than the legionary fortress (see below, p. 43). But at least a certain amount of this material found its way to other sites in North Wales, and for this purpose the second road mentioned above would have been available when needed. The line of this road has not in fact been worked out, although its general trend appears to be towards the Roman site at Ffrith, in Flintshire.[3] Its relation to the tileries is therefore uncertain. Acton marked its line (*e.g.* in *R.C.A.M. Denb. Inv.*, Fig. 26, p. 72) as probably running up from the ford of the Dee by way of Holt Hill, past the clay-pits to the south of the site, and along the line of the lane branching from the Old Chester Lane (*see* Plan, Fig. 2). This direction, how-

[1] A large part of the traffic between Chester and other Roman sites in North Wales was probably water-borne (*see* W. J. Hemp in Wheeler, *Segontium*, p. 171) and Chester's importance as a port dates from early times. Its downfall was ultimately brought about by the sand deposits of the Dee, which impeded the traffic, and brought its neighbour, Liverpool, into prominence (Ormerod, *History of Cheshire*, 2nd edn., i, p. LXXIII).

[2] *See* Map, Fig. 1. Their line is briefly described by Miss M. V. Taylor, "Roman Roads in Cheshire," *Arch. Camb.*, 1910, pp. 439 ff.

[3] Definite traces of Roman occupation have been revealed here, although the exact character of the site has yet to be determined. See M. V. Taylor, "Roman Flintshire," *Flints. Hist. Soc. Journ.*, ix, pp. 1–39. Dr. Cyril Fox here definitely proved the post-Roman origin of Offa's Dyke in relation to the site (*Arch. Camb.*, 1927, pp. 256 ff.).

ever, does not appear to have been determined by excavation, and the road may well have run further to the south, approximately along the line of the modern road from Holt to Gresford.[1] Whatever its exact line, however, if the existence of the road be assumed, it must have passed sufficiently closely to the site to ensure easy communication with the interior.

## 2. The Buildings Excavated.

The buildings excavated fall into two main categories—the domestic and the industrial. As already stated, they stretched over the greater part of two fields, the Wall Lock and the Hilly Field, an area in all of some twenty acres, as follows :

1. *Domestic buildings.*
   - (i) The workmen's barrack-blocks.
   - (ii) The bath-building.
   - (iii) The dwelling-house.
2. *The industrial buildings.*
   - (iv) Two sets of workshops and drying-shed.
   - (v) The double-flue kiln.
   - (vi) The main kiln-plant.
   - (vii) The clay-pits.

In addition to these buildings, which are definitely plotted on the excavator's original plans, the ground in the immediate neighbourhood of the kilns was covered with a complex of walled-pits, floors, and foundations, in and upon which many of the manufacturing processes were carried out.[2] The works in this respect must have resembled pottery-works on the Continent (*e.g.* at Rheinzabern and Heilingenberg) where a similar lack of co-ordination occurs (see below, p. 23). Unfortunately, no attempt was made to incorporate these features on the plans, and consequently the only available plan, since it omits them, shows a simplicity in the general arrangement of the settlement which is more apparent than real.

In addition, it may be doubted whether the excavations carried out by Mr. Acton entirely exhausted the possibilities of the site. The presence of an unattached drain to the south of the main body of the buildings, the direction of which was towards the Devon brook, hints at a building somewhere in this area. But the drain may also have been intended to carry

[1] *Cf.* fields called " Pavement Field " flanking this road on Palmer's map, *Arch. Camb.*, 1906, p. 220.

[2] *Acton Letters*, 1.5.1912.

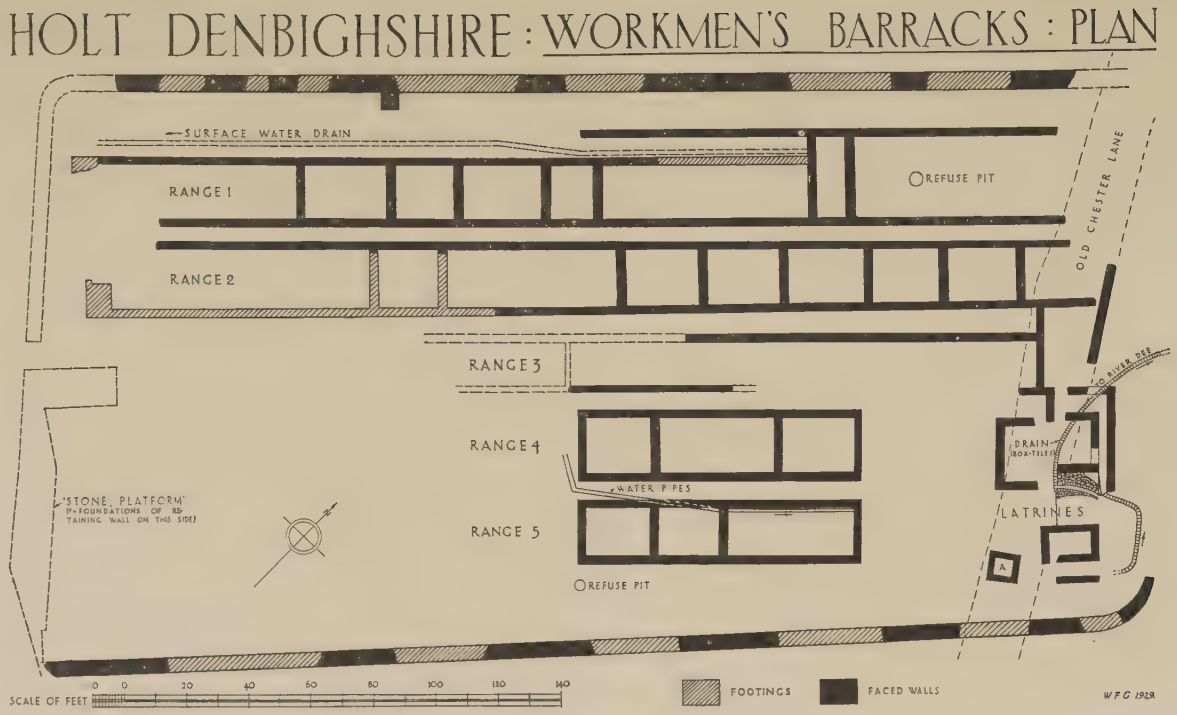

HOLT DENBIGHSHIRE : WORKMEN'S BARRACKS : PLAN
SURFACE WATER DRAIN
RANGE 1
RANGE 2
RANGE 3
RANGE 4
RANGE 5
REFUSE PIT
OLD CHESTER LANE
TO RIVER DEE
DRAIN (BOX-TILED)
WATER PIPES
LATRINES
A
'STONE PLATFORM'
(= FOUNDATIONS OF RE-TAINING WALL ON THIS SIDE)
REFUSE PIT
SCALE OF FEET
0 0 20 40 60 80 100 120 140
FOOTINGS
FACED WALLS
W F C 1928

Fig. 4.

away surface-water from the higher ground to the south of the settlement. On the other hand, this land has been under continual cultivation for very many years. Buildings near the surface—as in the case of the barrack-buildings to be described below—were largely destroyed by the plough, and their fragmentary remains may well have escaped the notice of excavators over a wide area.

The buildings in the main were aligned with their long axes in a north-west to south-east direction, parallel to the (presumed) old course of the river[1]. The workmen's barracks, however, were set almost at right angles to the other buildings, in a north-east to south-west direction.

### (i) *The Workmen's Barracks.*

The workmen's barracks (site-plan, Fig. 2 and Fig. 4) lay for the most part in the Wall Lock Field, but its north-east end passed under the Old Chester Lane into the Hilly Field. The barracks consisted of an enclosure apparently originally trapezoidal in plan, with rounded corners. The original length of the boundary walls, which were of coarse construction, and some 7 feet in thickness, is uncertain; as excavated, the maximum dimensions of the enclosure were 384 feet by 198 feet. The boundary walls on the south-west and north-east were entirely wanting. In the former case the remains of a "stone platform" of somewhat irregular form, extended from the south corner of the enclosure, and may have represented the fragmentary footings of the wall on this side;[2] the north-east had been entirely destroyed by agricultural work, and very few definite traces of walls were visible.

The buildings contained in the enclosure were in the main of simple plan, consisting of a series of five ranges of rooms running parallel to the main longitudinal axis of the enclosure, with a more complex system of walls in the east end. Of the five ranges, the three northerly apparently ran the whole length of the enclosure, a distance of some 336 feet, and—at least in the case of the two most complete—resembled in plan a somewhat modified form of barrack-block. Range 1 (the most northerly) consisted of a series of rooms 17 feet wide connected with a 7 foot corridor, the rooms at the western end (which was incomplete) taking up the whole width of the block (26 feet) on the lines of the centurion's quarters in the L-shaped

[1] The bank was undoubtedly the determining factor in the general planning of the settlement, as shown by the alignment of the majority of buildings with it.

[2] It is apparently represented as such on Haverfield's plan. See references above, p. 5.

military barracks. A large rubbish-pit was discovered in the most easterly of the rooms of this block, and helped to give the clue to the character of the enclosure. A " surface water drain ", running the length of the corridor, would seem to indicate that for part at least of its history this corridor was without a roof. The nature of the structure of the drain is not recorded.

Of the second and third ranges, the latter was much ruined. Both apparently faced inwards towards a corridor of the same width as before (7 feet). The width of block 2 varied from $16\frac{1}{2}$ to $18\frac{1}{2}$ feet, while that of block 3 as far as it remained, was $13\frac{1}{2}$ feet.

Blocks 4 and 5 consisted of two ranges of three rooms, each 90 feet long by $22\frac{1}{2}$ feet and 20 feet wide respectively, set 6 feet apart, towards the eastern end of the remaining part of the enclosure. Associated with block 5 was a line of water-pipes apparently intended to convey water to the complex of buildings in the east corner. Near the end of this building was a second large rubbish-pit.

The remaining buildings in the enclosure, at its eastern end, were apparently latrines. The structures in this part were much ruined, and the complete plan could not be recovered. The main feature was a set of double walls connected with a double series of drains, built of box- and roofing-tiles, which discharged into the Dee. South of the buildings were two smaller chambers, the second of which (A on plan, Fig. 4) was built well below the ground level, and had apparently carried steps. This small building, 6 feet square, may have been used for stores.

The destroyed character of this enclosure, due in part to intensive cultivation of the land, in part probably also to the activities of stone robbers (added to the fact that detailed evidence is particularly wanting for its excavation), makes anything more than a description in general terms impossible. That its plan owed something to the military traditions of its builders has already been suggested. A centurial stone found built into one of the walls—it is uncertain which—although upside down, and therefore not in its original position [1]—adds weight to this conclusion. The general nature of the enclosure was clearly domestic. The two rubbish-pits were full of animal-bones of various kinds,[2] sea-shells, pottery-sherds (including large numbers of amphora-fragments) and iron and bronze fragments. Iron nails were found in large numbers all over this area, together with much window-glass.

[1] *Acton Letters*, 9.2.1915.

[2] See below, p. 186.

Antefixes of various types (see below, p. 136) and roofing-tiles were also common. The building material throughout was the red Bunter sandstone, in some cases in fairly large blocks. Thus the portion of the south retaining wall beneath the Old Chester Lane was composed of two courses of blocks 2 feet long.

The domestic character of the finds, therefore, clearly indicates that the barracks are to be grouped with the domestic buildings as the quarters of the potters and workmen who must have formed the greater part of the settlement.

As might be expected, evidence of chronological importance is almost entirely wanting. But the levels, the general uniformity and simplicity of plan, and the uniformity of building construction indicate that the work was all of one period, although the occupation appears to have been prolonged. According to the excavator, the coins found were "of no importance as evidence of erection or occupation."[1] In all these buildings cultivation had effectually removed all traces of floors and occupation layers.

### (ii) *The Bath-Building.*

The bath-building lay 100 feet to the north-east of the barracks, and with the dwelling-house, bordered the margin of the low bank already referred to, for a frontage of some 200 feet (*see* Fig. 2). The plan of the building as recovered was practically complete, except at its north-west end, where some destruction had taken place. The overall length of the bath-building was 81 feet, its small size being consonant with the needs of a comparatively small establishment. It contained, however, a number of well-preserved features of interest (plan, Fig. 5).

The main element in the plan consisted of a long range of rooms comprising, in order, a plunge bath, dressing-room, frigidarium, and two hypocaust rooms probably intended for tepidarium and caldarium. Attached to the side furthest from the river of this range was an anteroom 39 feet long by 12 feet 6 inches wide, floored, as were the other rooms in the building, with concrete. The feature of interest in this room was a latrine, consisting of a pit 3 feet by 2 feet, on the natural rock, well-built of tiles and concrete between containing walls of

[1] *Acton Letters,* 17.3.1915. Unfortunately, very few of the small objects, including pottery and coins, are in the slightest degree adequately labelled. They cannot, therefore, be used even for the general dating of individual buildings, and are of value only as an indication of chronology for the site as a whole.

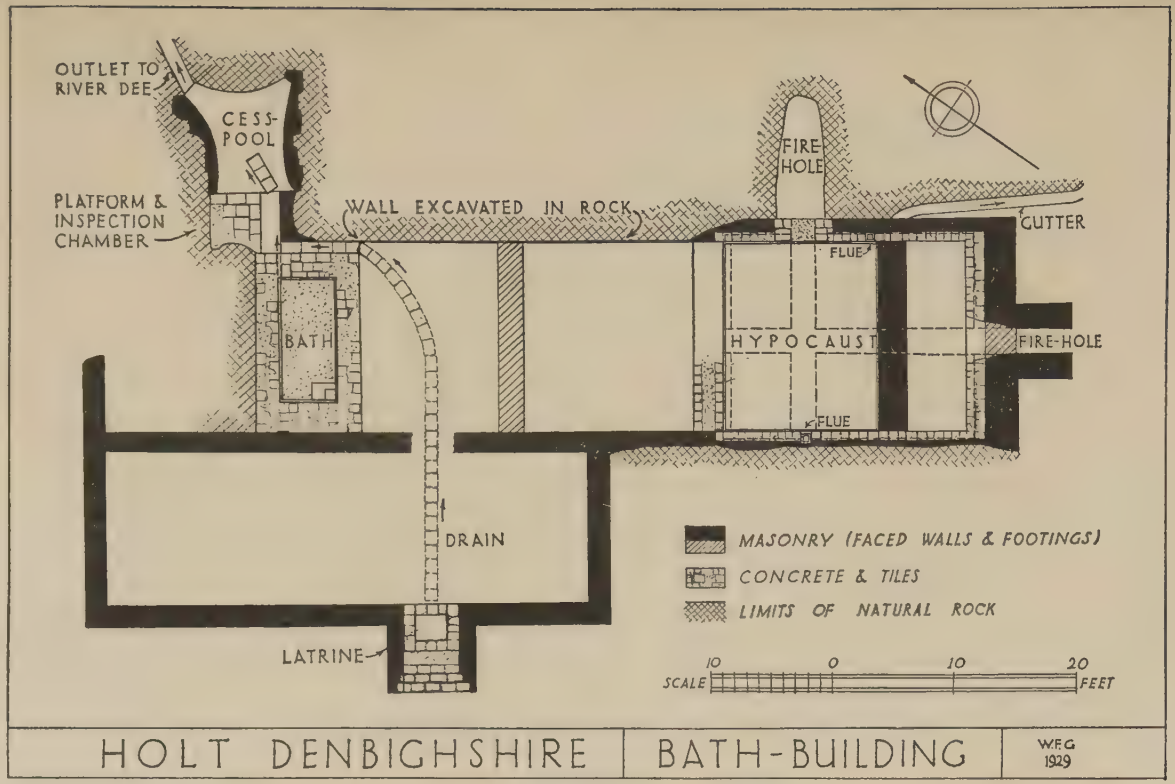

OUTLET TO RIVER DEE
CESS-POOL
PLATFORM & INSPECTION CHAMBER
WALL EXCAVATED IN ROCK
FIRE-HOLE
GUTTER
FLUE
BATH
HYPOCAUST
FIRE-HOLE
FLUE
DRAIN
LATRINE
MASONRY (FACED WALLS & FOOTINGS)
CONCRETE & TILES
LIMITS OF NATURAL ROCK
10 0 10 20
SCALE FEET
HOLT DENBIGHSHIRE
BATH-BUILDING
W.E.G. 1929

Fig. 5.

red sandstone. The outer series of tiles was stepped downwards towards the interior, and the latrine may have had direct outward communication independently of the rest of the building. The drain ran beneath the concrete floor of this room directly under the doorway communicating with the dressing-room, and curved to the left to join the drainage system at the north corner of the building (*see* plan and Fig. 6).

In the main range of rooms, the plunge bath and the attendant drainage system for this and for the latrine, were well-preserved. The bath, of tiles and concrete, was 10 feet long by 5 feet wide, with a depth of 4 feet 6 inches. At its south corner was a double step of tiles, and at the diagonally opposed corner the outlet for waste water. This outlet drained into an " inspection-chamber " which in turn communicated by means of a drain of box-tiles, with the cess-pool, the latter emptying into the Dee. Cess-pool and inspection-chamber were lined with masonry, the latter having on one side a tile and concrete platform allowing access to the system. The latrine-drain mentioned above was built of large box-tiles. As already stated, this drain curved inwards to connect with the inspection-chamber by means of a line of box-tiles against the lower end of the plunge-bath. The drain had a drop of 2 feet between its upper and lower ends. The whole system was remarkably well arranged and preserved (Figs. 7 and 8).

The two rooms, probably serving as dressing-room and frigidarium, between the plunge-bath and the hypocaust, had concrete floors, and were divided by a party-wall of which only the foundations remained. This wall, as in the case of the wall dividing the frigidarium from the hypocaust-room, may have been faced with tiles set in concrete.

The remainder of the range was taken up with the two hypocaust-rooms, the heating arrangement being of a rare type which embodied a number of unusual features. The system consisted of two main channels which intersected at right angles in the centre of the larger of the two rooms, one arm being continued under the party-wall and beneath the wall of the smaller room to a tile-built fire-hole beyond. Connected with these main channels was a line of single box-tiles which ran round and partly under the main wall to enclose both rooms (*see* plan, Fig. 5). The main channels were built of double box-tiles. The width of the channels was 21–24 inches, three box-tiles 7–8 inches wide being used to the width. The depth of the channels was 11–12 inches, the depth of the double box-tile. These double box-tiles were substituted by large square single tiles at the central junction of the main channels, which were cased at sides and on top with flat tiles,

Fig. 6. The bath-building: latrine, showing tiled sides and drain. This drain curved to the left as shown by the dotted line to the outlet shown in Fig. 7. *To face p. 18.*

Fig. 7.—The-bath building: plunge-bath and dressing-room, with latrine (A) beyond. The direction of the latrine-drain is shown by a dotted line. *To face p. 18.*

Fig. 8.—The bath-building: drainage system, from the outlet to the river. A, outlet to latrine along lower end of bath; B, platform above inspection chamber; C, main outlet.

*To face p. 18.*

Fig. 9.—The bath-building: hypocaust, showing the perforated "bridge-tiles" in position. A, position of furnace, as yet unexcavated.

*To face p. 19.*

Fig. 10.—The bath-building: flue to hypocaust, showing triple lining of concrete, revetment-tiles, and plaster.

*To face p. 19.*

over which was laid a concrete floor to a depth of about 6 inches. The central junction was bridged to carry the floor with square tiles, somewhat wedge-shaped in section, from which the centres had been cut out, arranged in such a way as to allow ready passage of heat, from channel to channel (*see* below, p. 136, for dimensions of tiles, and Fig. 9 for details described).

The system communicated with two fire-holes (*see* plan, Fig. 5), the one excavated in the natural rock on the north side of the larger room, the second, at the end of the other main channel, in the end-wall of the building. Each of the furnaces was lined with tiles set in concrete.

There were some indications that the end furnace of the system had been used as a chimney. What this evidence was it is not now possible to discover. The system had been planned with two flues of single box-tiles, which were set in concrete behind the revetment-tiles of the large room (Fig. 10).

No parallel for this hypocaust has been traced.

The structure of the hypocaust-rooms was more elaborate than that of any other part of the building. The walls elsewhere were built of the usual red sandstone, and were in part (as in the case of the north side of the frigidarium) excavated in the natural rock. In these two rooms, however, the main walls were lined with 8-inch tiles set in concrete, while the larger had three additional linings : the outer of plaster being laid over large flat tiles which in turn were set in concrete (Fig. 10).

There is no record of any stratified deposits having been noticed in the course of excavation of this building, or, indeed, of any of the other buildings on the site. Structurally, however, it appears to have remained unaltered throughout its history. Its plan shows no sign of extensive modification or rebuilding.

### (iii) *The Dwelling-house.*

The dwelling-house lay 5–7 feet to the east of the bath-building and in the same alignment with it along the edge of the bank (site-plan, Fig. 2 and Fig. 11). The overall length of this building was something more than 85 feet. Its plan was recovered almost completely, the outer end only of the corridor being destroyed. Its layout brings it into the well-known class of corridored houses, numbers of which have been excavated in this country, comprising a corridor with one or more ranges of rooms communicating with it. As with the bath-building, its simple plan does not suggest that extensive

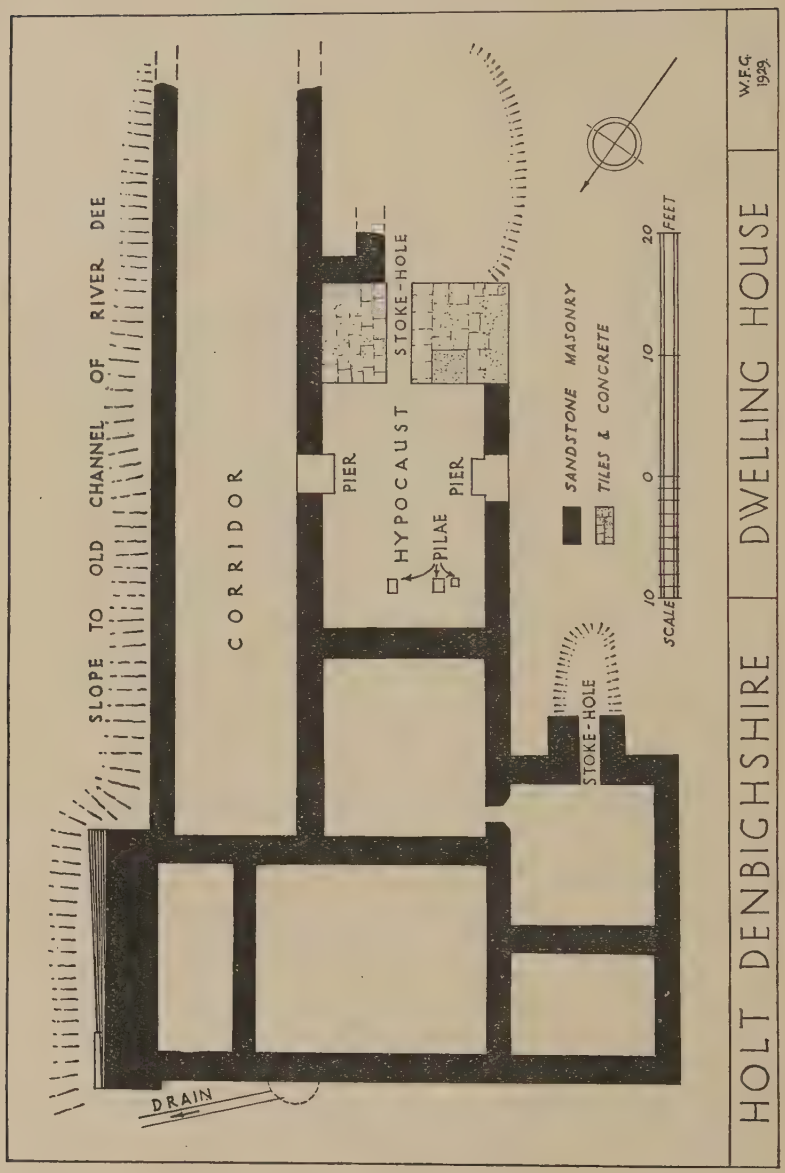

SLOPE TO OLD CHANNEL OF RIVER DEE
CORRIDOR
PIER
HYPOCAUST
PILAE
PIER
STOKE-HOLE
STOKE-HOLE
DRAIN
SANDSTONE MASONRY
TILES & CONCRETE
0
10
20
FEET
SCALE
10
HOLT DENBIGHSHIRE
DWELLING HOUSE
W.F.G. 1929

Fig. 11.

Fig. 12.—The dwelling-house: basement-floors, showing remains of "pilae" in position.

Fig. 13.—The dwelling-house: offsets at north corner.

*To face p. 21.*

alterations or additions were found necessary during its occupation. Of the internal structure of the building, however, little remained except the basement (hypocaust) floors, with here and there traces of the *pilae* which had originally carried the living-floors of the rooms. All the remaining floors were of concrete, except for that of the small room in the west corner, and the larger one immediately in front of it, the floors of which were on the natural rock.

There were two sets of hypocaust-heated rooms, the one consisting of a large room 20 feet 4 inches in length, the fire-hole of which was built of tiles set in concrete. On the floor of this hypocaust (plan, Fig. 11 and Fig. 12) the basal tiles of three *pilae* were still in position, and built into the two main walls were large stone piers which were also intended apparently to support the living-floor. The second hypocaust system comprised two rooms adjoining that just mentioned. The system was fed from one furnace, the heat being conveyed to the second room by means of a gap in the party-wall. Both stoke-holes were in part excavated out of the natural rock.

On the riverside, the crumbling nature of the ground had caused the outer wall of the corridor in part to collapse. At the north corner of the building the thrust of the outer wall on the edge of the bank was taken by an elaborate series of offsets which gave the wall a thickness of 4 feet at its lowest course (Fig. 13).

The original plans mark a " drain " as running from the north-west wall of the house in the direction of the Dee. No evidence is available, however, to indicate either its structure or purpose.

It is almost certain that the dwelling-house was the " Romane monument " opened up by Crue in 1600 (see above, p. 4). The structure uncovered by Crue was apparently a hypocaust, and deliberate excavation would best explain the absence of *pilae* and floors from this building. The destruction of the floors carried with it all evidence of stratification and chronology.

### (iv) *Workshops and Drying Shed.*

As already stated (above, p. 12) the site-plan is not complete as far as the industrial buildings are concerned, in that the complex series of walled pits, floors, and other structures which covered the ground surrounding the kilns was omitted from the original plans. No details of these structures are available, but there can be no doubt that they resembled similar pits, etc., which have been found on other pottery-

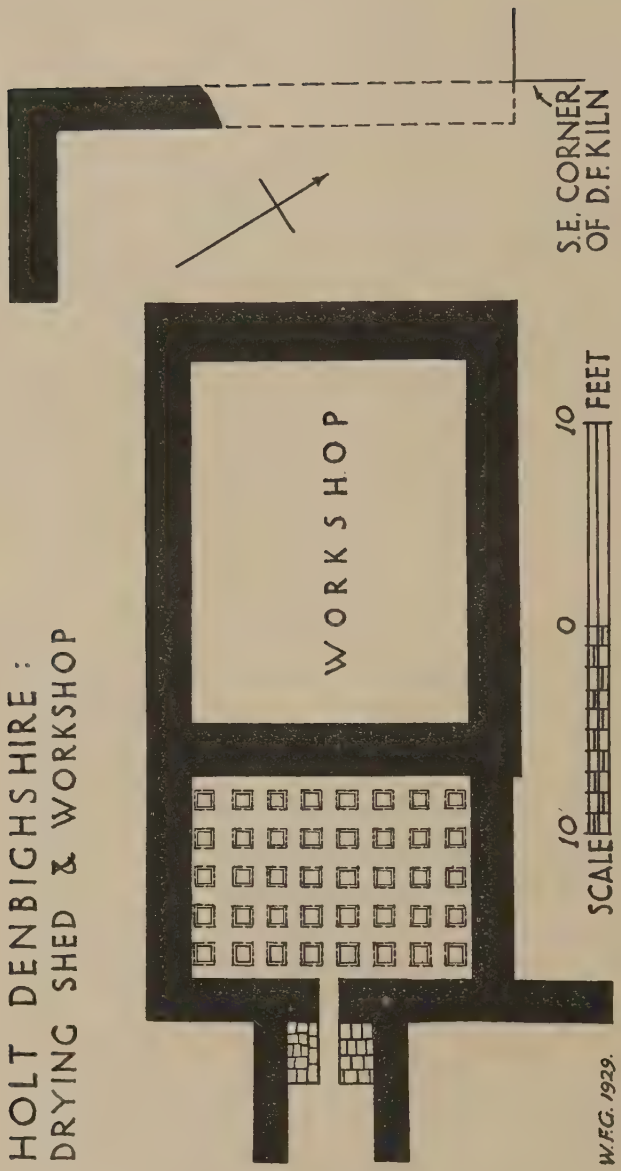

HOLT DENBIGHSHIRE :
DRYING SHED & WORKSHOP
WORKSHOP
S.E. CORNER OF D.F. KILN
SCALE
10'
0
10
FEET
W.F.G. 1929.

Fig. 14.

sites on the Continent.[1] In these pits and roughly erected buildings were carried on the various manufacturing processes —the washing and preparation of the clay, the throwing of the pottery on the wheel, the moulding and drying of the tiles. They were built according to no definite plan, the main consideration being convenience of working according to the needs of the moment. Only two of these buildings were recorded in the plans, and these alone appear to have been of the nature of permanent structures.

The first consisted of a range of rooms some 100 feet long, in the same line with the bath-building and dwelling-house, and some 70 feet south-east of the latter, on the presumed old river bank (see site-plan). The masonry employed in the walls of this building was much coarser than that found in the domestic buildings, and, with the contents of the rooms, clearly indicated its industrial character.

Large quantities of pottery-fragments were found in the various rooms, together with potters' tools and stamps,[2] and quantities of clay in the raw state, ready for working, the floor of one room being covered with clay to the depth of 2 feet.[3] A large part of this building, however, was ruined by a land-slip on the riverside. The proximity of the river at this point would have been of great convenience from a manufacturing point of view, as affording a plentiful supply of water close at hand.

The second workshop, which had a hypocaust attached, apparently as a drying-shed for the better classes of pottery, was situated to the south of the first in the middle of the slope, and in direct proximity to the large double-flue kiln next to be described. The building was 42 feet in overall length, the walls being of good sandstone masonry, 2 feet to 2 feet 9 inches in thickness.

The walls here were close to the modern surface of the ground, and the upper floor of the hypocaust had been destroyed. The pillars themselves, however, remained, in most cases probably to their original height of 1 foot 6½ inches. The usual 8-inch hypocaust tiles were used, and many of these tiles were said to bear legionary stamps. The cheeks of the fire-hole were also built of tiles.

The absence of the upper floor of the hypocaust and consequently of finds to explain the purpose to which the room was

[1] *Cf.* Ludowici, ii, site VII for an example of this haphazard planning.

[2] See below, p. 130 and Fig. 57.

[3] Large stones, said to have been used for pounding the clay are exhibited in the collection of finds from Holt presented by Mr. Acton to the Wrexham Museum.

put, makes the use of this part of the building uncertain. Its position, however, suggests that it was industrial, and not connected in any way with the domestic side of the settlement.

Little can be said of the workshop itself. This room was 18 feet long by 13 feet 6 inches wide, and its floor was apparently on the same level as that of hypocaust-basement floor of the drying-room. Many pottery-sherds of various kinds were found in it, and there is a possibility that it may also have been used as a storeroom for wares until they were needed for transport (Fig. 14).

At the (workshop) end of the building was a detached wall in a ruined state, but remaining in part to a height of 1 foot 4 inches. This wall ran parallel to the end wall of the workshop, leaving a space 9 feet 1 inch wide, while at its south end, 4 feet from the corner of the workshop, it turned inwards at a right angle for a length of 8 feet 9 inches. Its north end, which was largely ruined, apparently extended to the south-east corner of the double flue kiln, so that the area enclosed in all was some 22½ feet long by 9 feet 1 inch wide. The purpose of this enclosure is uncertain. Its proximity to the double-flue kiln suggests that it may have been used as a fuel store, being perhaps covered with a lean-to roof supported against the end wall of the workshop.

### (v) *The Double Flue Kiln.*

The double flue kiln was situated just to the north of the workshop and drying-shed, its south-east corner being in contact with the L-shaped wall already described (site-plan, Fig. 2).

In general layout this kiln was similar to the majority of the other kilns on the site. The fire-holes and stoke-hole faced in a north-easterly direction, towards the river, the body of the kiln being built in a pit dug out in such a way as to take advantage of the slope of the ground to obviate labour and provide a ready means of access to the kiln. The level of the oven floor, which was practically the same as that of the old modern surface, also provided for easy handling of the materials in charging and drawing the oven. This feature is an almost invariable one in kilns of the period (see below, p. 54) and is found in all the Holt kilns. As with the other kiln-plant, an attempt was made to build a solid structure by forming an outer casing of sandstone masonry against the sides of the pit, within which the kiln proper was built of tiles.

The overall dimensions of the kiln were 30 feet by 29 feet 3 inches, the existing height of the structure, which was

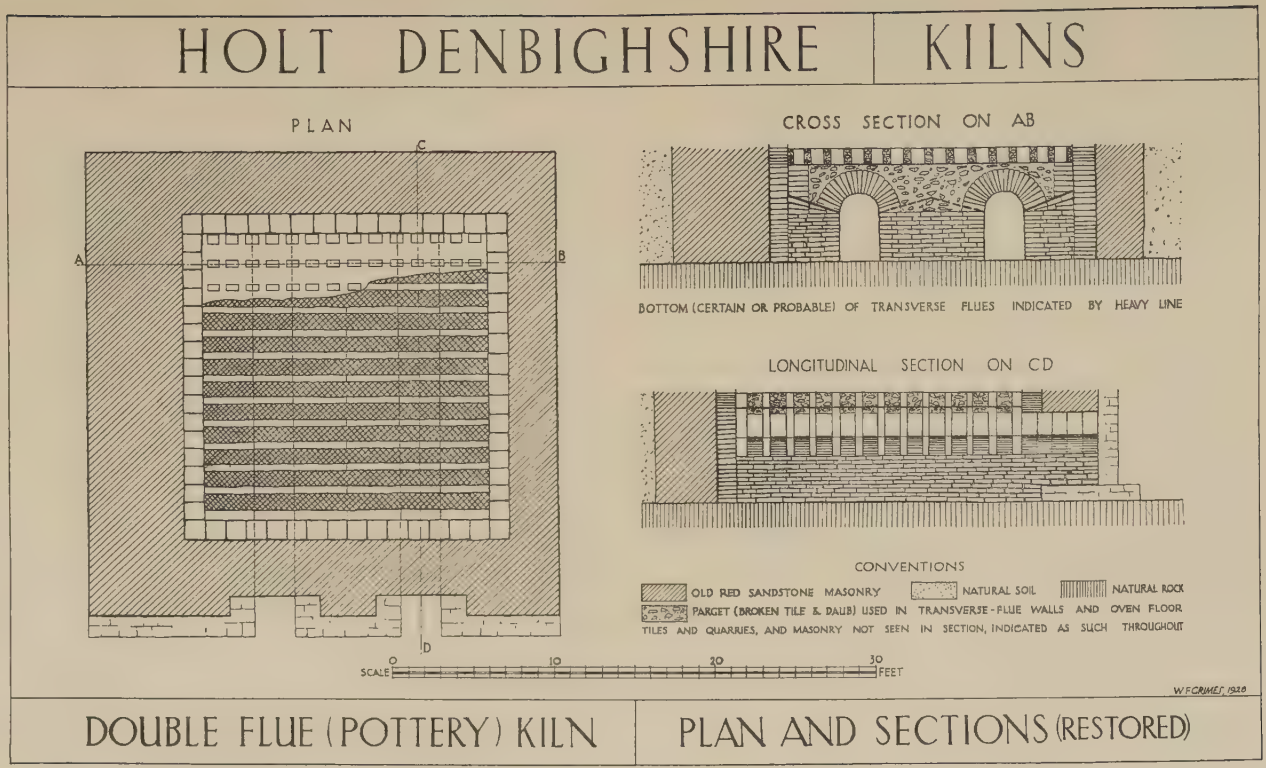

HOLT DENBIGHSHIRE
KILNS
PLAN
C
A
B
D
CROSS SECTION ON AB
BOTTOM (CERTAIN OR PROBABLE) OF TRANSVERSE FLUES INDICATED BY HEAVY LINE
LONGITUDINAL SECTION ON CD
CONVENTIONS
OLD RED SANDSTONE MASONRY
NATURAL SOIL
NATURAL ROCK
PARGET (BROKEN TILE & DAUB) USED IN TRANSVERSE-FLUE WALLS AND OVEN FLOOR
TILES AND QUARRIES, AND MASONRY NOT SEEN IN SECTION, INDICATED AS SUCH THROUGHOUT
SCALE
0
10
20
30
FEET
W.F.GRIMES, 1938
DOUBLE FLUE (POTTERY) KILN
PLAN AND SECTIONS (RESTORED)

Fig. 15.

erected on the natural rock floor, being 7 feet (*see* plan, Fig. 15). The masonry casing was of rough sandstone, in most of which there was no attempt at coursing, the main aim being to provide a packing which should give a solidity to the whole. A dressed face was given to this masonry only where it was exposed to view, viz., on the front wall of the kiln (Fig. 16). The height of the main flue openings here was 4 feet, and their width 2 feet 5 inches. The arches were built of voussoir-shaped tiles 15 inches in length. They were separated by a buttress 1 foot in depth, while on the outside of each the wall face projected an equal distance. The wall was erected on a plinth 1 foot 6 inches deep, which was prolonged under the main wall for a length of 6 feet, its face here being flush with the inner walls of the main openings.

As already stated, it was within the casing or packing of masonry that the kiln proper was erected. The red sandstone was first of all given a lining of tiles and quarries to a thickness of 15 inches, thus enclosing an area 17 feet 8 inches square.

The main flues ran the whole length of this area, to divide it into three compartments, the two outer being three feet wide, and the central 6 feet 9 inches. The flues were 2 feet 5 inches wide ; their perpendicular sides were carried up to a height of 3 feet, with quarry tiles of an average thickness of $2\frac{1}{2}$ to 3 inches, and this height was maintained across the whole of the intervening space between flues and outer walls, thus giving a solid base for the erection of the cross-walls.

The cross-walls were twelve in number, running the whole width of the kiln, parallel to the front wall, and partitioning off thirteen cross-flues (Fig. 17) by means of which the heat was conveyed upwards from the main flues to the oven above. The average width of these walls was 12 inches, and the width of the flues 5 inches, the flues at each end being slightly wider than the remainder (7 inches). The cross-flue walls were carried across the main flues by means of arches, built, as in the case of the outer arches, of voussoir tiles 15 inches long. Nowhere was one of the arches found intact, little more than the springers remaining in most cases. The centre part of the walls was built up of broken tiles of various kinds, daubed together with a silicious clay mixture, which in the course of firing became baked into a solid mass. In the case of the side walls, however, the intervening space between the arches and the side of the kiln was built up of tiles, pargetted together with the clay daub. This daub, mixed with tile-fragments as before, was also used to fill in the widening space between the arch and the vertical face of this tile-work (*see* Fig. 18, and section on AB, Fig. 15). These tiles were not bonded into the

Fig. 16.—The double flue kiln: front view of main arches, showing tile fillings.

Fig. 17.—The double flue kiln: interior of kiln. Cross-flue walls with springers of arches still in position. A, remains of oven-floor; B, right-hand main flue. The survey pole stands in the rear right-hand corner of the kiln.

*To face p. 26.*

Fig. 18.—The double-flue kiln. Detail of cross-flue wall, showing the gap between tiles and arch filled in with daub, and stepping of brickwork.

*To face p. 27.*

side walls of the kiln. The cross-flue walls were built to a height of 3 feet, thus clearing by several inches the top of the main flue arches. Over these walls was built the oven floor.

The nature of the bottom of the cross-flues in this kiln is somewhat uncertain. In the other kilns on the site (*see* below, p. 39) it was found that the cross-flues invariably had inclined bottoms, which encourage the upward movement of the gases, flame, etc., and prevent " baffling " and consequent waste of heat by elimination of waste (" dead ") space (*see* below, p. 59). In the case of the double flue-kiln, however, the structure was so ruined that nothing definite can be said. The centre of the kiln particularly was badly preserved, but in the outer flues were found definite traces of a sloping bottom in the form of stepped brickwork, which would seem to indicate that here as elsewhere the more efficient sloping bottom was preferred to the horizontal bottom because of the baffling of currents set up by the latter. In the section, therefore, (Fig. 15) the probable upward slope of the cross-flue bottom is indicated in the centre by a broken thick line, while on the outside it is marked as definite.

Little of the oven floor remained, but its nature, and the size and general character of the vent-holes by means of which the heat was conveyed from the flues to the pottery, was clearly indicated. The floor was 12 inches thick, and was built of daubed tile-fragments as in the case of the cross-flue walls. In the opinion of the excavator, the floor was built as an entirety, the vent-holes being made afterwards by driving through " from below " a wooden mallet. The edges were then finished off with the fingers.[1] Finger-marks were actually still present on the clay in some cases and there is no doubt that great care was taken in the operation of making these vent-holes, since on them depended the success of the firing. But it is hard to see how many of these holes could have been forced through a 12-inch floor *from below*, in the restricted space available for working. In this kiln the vent-holes were larger and more numerous than any of the others, the measurements being 9 by 5 inches (7 inches in the case of the end flues) with 5-inch intervals between each (*i.e.* 14 vent-holes to each cross-flue).

There is some evidence that the double-flue kiln was abandoned before the other kilns on the site. In the first place, with the exception of no. 2 Kiln, which was automatically put out of commission by the building of the round pottery kiln (see below, p. 37) its internal structure was more completely

[1] Letter to Mr. Heywood Sumner, April, 1921.

ruined than was the case with any of the others. Secondly, the main arches of the flues were bricked up with tiles, apparently to preserve them, as though the kiln was temporarily given up, and for some reason never re-used. It is difficult to see why, if this bricking up of the arches was carried out on the abandonment of the whole site, the arches of the other kilns were not bricked up as well—although it might perhaps be urged that as this kiln was in some respects the most elaborate of all it was thought more worthy of preservation.

But it so happens that some evidence for the date of its abandonment is provided by the record of a find of four pottery-vessels in the right hand main flue, directly behind the front wall. All are of good hard-fired ware, and comprise : two two-handled flagons (type 126, p. 158) of early second-century date ; an unguent-pot of a type (231, p. 172) which cannot be closely dated ; and a lugged cooking-pot (type 218, p. 170), which, though not paralleled, closely resembles the well-known flanged and carinated bowls, and is not likely to be later than the early part of the second century.

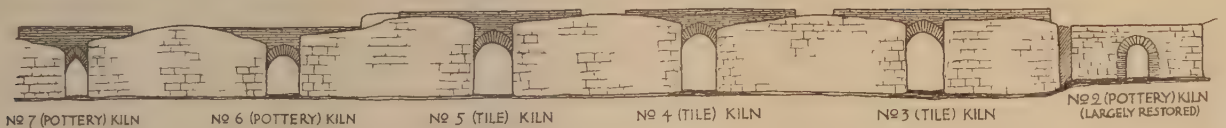
The condition of these vessels is such that they could not have lain on the site for any appreciable length of time before reaching the place in which they were found. Except for slight blackening in the case of 218, also, they show no signs of having been subjected to great heat, which would be expected to show had they been allowed to remain in the flue during successive firings. It may be presumed, therefore, that they formed part of the last charge in the kiln, finding their way into the main flue on the collapse of the oven-floor. The position of these practically undamaged vessels here would therefore seem to indicate that the kiln was abandoned (after firing, to judge by its ruined condition—see below, p. 32) some time during the early half of the second century A.D. But see further p. 51 below.

I have been able to find no parallel for this construction of a kiln with double flues in Roman times, and no hint as to its origin or development. It was probably an experiment on the part of the Holt potters at building a kiln of larger capacity than usual, on the lines of the single flue cross-walled type, with two fires to provide the necessary extra heat.

The materials used in the building of this and the other kilns were not the ordinary tiles turned out for the use of the fortress, but crudely made tiles of various sizes and thicknesses (those in the kiln-lining being 15 inches square) of the coarse sandy loam which formed also the silicious daub of the parget. In addition, however, roofing tiles, mostly broken, were very largely used in the building of the internal structure.

# HOLT DENBIGHSHIRE : KILN PLANT

## ELEVATION

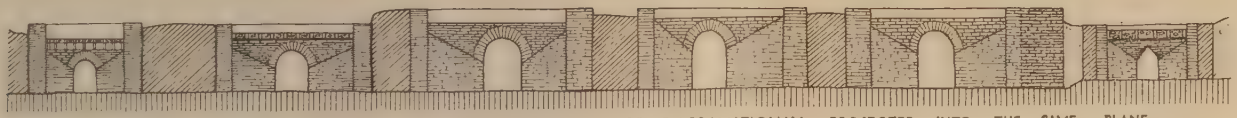



CONVENTIONS
USED IN PLAN & SECTION
OVEN FLOORS
TILED WORK (SECTION)
(PLAN)
MASONRY
NATURAL SOIL
NATURAL ROCK

CROSS FLUE WALLS ARE SHOWN CROSS-HATCHED WHERE EXPOSED ON PLAN

THE ROUND POTTERY KILN IS OMITTED IN ELEVATION & SECTION

## LONGITUDINAL SECTION



NOTE: THE SECTIONS THROUGH THE CROSS-FLUES, WHERE NOT IN LINE, ARE DIAGRAMATICALLY PROJECTED INTO THE SAME PLANE

## GENERAL PLAN

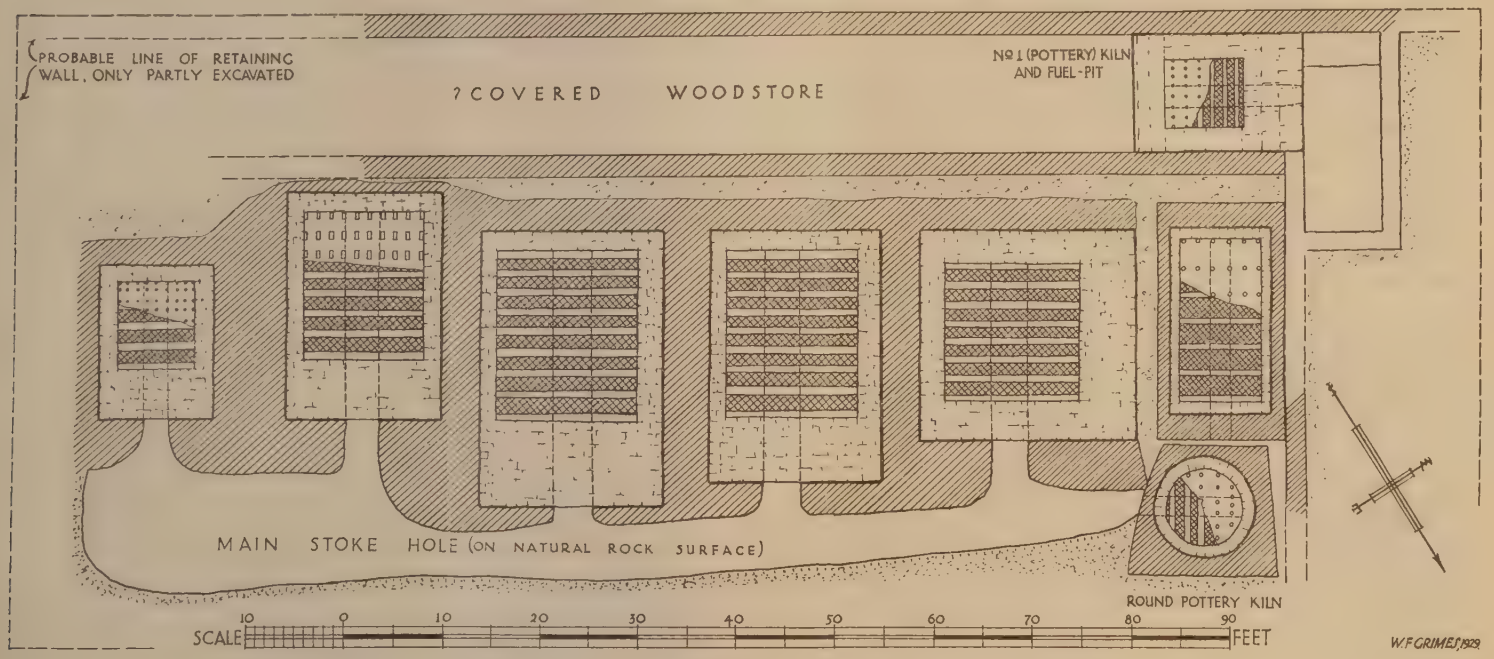

PROBABLE LINE OF RETAINING WALL, ONLY PARTLY EXCAVATED
? COVERED WOODSTORE
№ 1 (POTTERY) KILN AND FUEL-PIT
MAIN STOKE HOLE (ON NATURAL ROCK SURFACE)
ROUND POTTERY KILN
SCALE
10 0 10 20 30 40 50 60 70 80 90
FEET
W.F.GRIMES, 1928

Fig. 19.

*To face p. 29.*

(vi) *The main kiln-plant.*

The main kiln-plant was the most easterly of all the buildings excavated, being 80 feet to the south-east of the workshop and drying-shed, and aligned in the same direction.

The overall length of the plant was 136 feet, and its greatest width 58½ feet (*see* general plan, Fig. 19). These measurements, however, do not include the boundary-wall which apparently existed on the east, west, and south sides, since this wall was only partly excavated, and its line is not marked on the original plans. Its approximate position is indicated on the plan by means of a broken line.

Before proceeding to a detailed description of individual kilns, the general principles observed in the building of the plant and the features they embodied, may be considered.

The chief feature of the plant was a line of six kilns, the fire-holes of which all communicated directly with a single main stoke-hole varying in width from 12 feet to 2 feet 6 inches. Only in two cases, however, were the front walls of the kilns in the same line and everywhere the actual approach to the entrance of the main flue varied in depth.

Behind the main line of kilns, and parallel to their general direction, were found the remains of two walls of sandstone masonry 2 feet to 2 feet 3 inches thick and 12 feet apart. The outer of these walls was probably the enclosure wall of the plant on this side. With the inner, when complete it may have carried a roof, the intervening space being used for a covered woodstore in which the heat of the large kilns nearby would probably have helped to keep the wood dry.

At the west end of these walls, and apparently between them,[1] was built in another pottery-kiln (no. 1 pottery-kiln) which opened towards the west into a separate fuel and stoking-pit.

An eighth kiln—a round kiln for the firing of pottery—was added to the plant at the west end of the main stoke-hole. As shown below, this kiln was undoubtedly an intrusion into the original plan, which put out of action the long rectangular kiln (No. 2 on plan) immediately behind it.

As in the case of the double-flue kiln, the main line of kilns faced north-east towards the river. The slope of the ground was probably utilized as before, to lessen labour in digging out the pits for the erection of the kilns, and also for the provision of easy access to the fire-holes, probably by means of an inclined approach.[2] In the case of No. 1 pottery-kiln, the fire-

[1] But see below, p. 34. [2] Similar utilization of natural features was observed in kilns at West Stow, Suffolk (p 80, below).

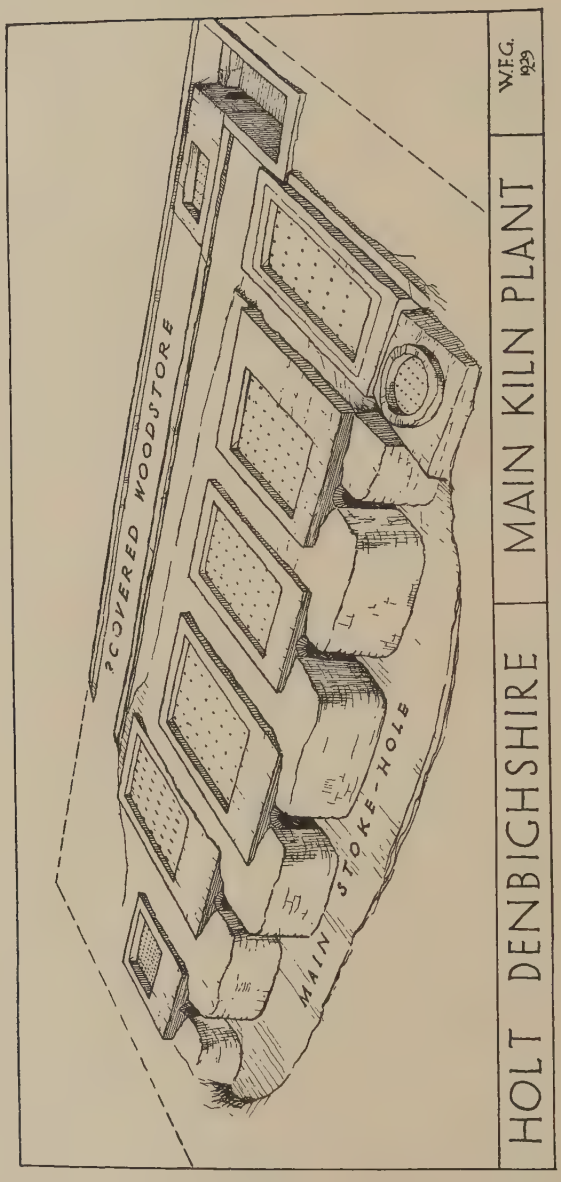

HOLT DENBIGHSHIRE
MAIN KILN PLANT
W.F.G. 1929
?COVERED WOODSTORE
MAIN STOKE-HOLE

Fig. 19a.

Fig. 20. Cross-walls of tile-kiln, showing use of roofers in construction. A, wall of oven ; B, oven-floor, still partly in position.

*To face p. 31.*

holes of which did *not* face in this direction, it was found necessary to build a walled stoking-pit below ground at a depth of 8 feet, access to which could only be obtained by the more cumbersome means of steps (remains of which were apparently found) or of a ladder. The exact nature of the approaches to the main line of kilns, however, was not recorded, even if any traces of it were found.

The main stoke-hole, providing access at once to every kiln in the line, was on the natural rock surface, and to a depth of 2 feet was covered with burnt wood, ashes, and charcoal. The natural rock here was 13 feet below the modern ground level.

The kilns throughout were also built on the rock surface, which was uniformly level, except at the west end, where, on the site of No. 2 pottery-kiln the floor rose abruptly some 2 feet. The three tile-kilns and pottery-kilns 6 and 7 were all built in one unit. As with the double-flue kiln, the necessity for giving this series a compact outer casing was provided for with a casing of sandstone masonry of a crude character, within which each kiln was built up as a separate structure of tiles. As before, no attempt was made at coursing the masonry, except where it was exposed to view on the large bastion-like cheeks which flanked the approach to each fire-hole. The same method was followed in the case of the kilns which were built free of this unit: No. 2 kiln and the round kiln each had its own masonry casing; No. 1 pottery kiln was built entirely of tiles, but its long sides seem to have been flanked by the walls of the (presumed) covered woodstore (see below, p. 34), which may be regarded as serving the same purpose as the sandstone packing employed elsewhere in the plant.

In the building of the kilns the material used consisted mainly of crude tiles [1] of various thicknesses and sizes, made of a coarse sandy clay which was also used as a clay daub, exactly as in the double flue kiln. On the other hand, large quantities of other tiles were also used. Roofing-tiles especially were largely employed in the walls,[2] the interstices between the flanges being filled in with a bedding of silicious clay daub (Fig. 20). While no date can be suggested for the working of these kilns, owing to the general lack of evidence, there was

[1] Similar "crude tiles" were used elsewhere—*e.g.* in the structure of kilns at the legionary tileries at Nied, Frankfurt-a-Main. See reference below, p. 35.

[2] Roofers appear to have been generally used in the structure of the larger types of Roman kilns (*cf.* for example, Ludowici, iv, p. 185, Fig. 121). In the rectangular kiln found at Colchester in 1877 fragments of roofers, as well as pottery, were used in the building of the walls in many places (below, p. 66).

every indication that the plant was in use for a very considerable period of time, and in the frequent repairs which became necessary any available waste material appears to have been used.[1]

In detail, the kilns varied considerably in their internal structure, and Mr. Joseph Burton states that there was evidence of their having been considerably altered in the course of their long working life. The envelope and skeleton of tiles and sandstone masonry are the only really permanent features: the high temperature to which the structure was subjected, added to the fact that for each "drawing", much of the superstructure probably needed to be destroyed, made it necessary for each kiln to be extensively repaired as far as its internal structure was concerned before each firing. The majority of the kilns at Holt appear to have been in full working order—*i.e.* daubed up ready for firing—when they were abandoned, and their excellent condition when compared with many other kilns of the same period, is probably due to the fact that they were abandoned *before*, rather than *after* firing. In this connexion the ruined condition of the double-flue kiln already described, and of No. 2 pottery kiln, the latter of which was certainly, and the former probably, abandoned after firing, may be contrasted with that of the other kilns, which were abandoned in full working order.

The nature of the oven-domes of these kilns is not definitely known. As was the case with other Roman kilns, this part of the structure may have been temporary, the superstructure being built up after charging, and broken down to allow access to the pottery after firing,[2] or permanent, with tiled walls and a permanent entrance.[3]

In its general setting out the kiln plant embodies a number of advantages from the point of view of practical potting, which have already been indicated by Haverfield (*loc. cit.*, p. 5). The arrangement of the main line of kilns communicating with a single stoking-pit provided for easiness of working

[1] Thus in Fig. 29, one of the V-ended bricks of the type used in the sub-floor of No. 7 kiln (p. 40, and Fig. 30 below) may be observed utilized in the make-up of the oven floor (bottom right-hand corner).

[2] In the kilns excavated in 1911 at Horningsea, Cambs., the domes appear to have been formed of alternate layers of clay and grasses, straw, etc., of various kinds, a covering of earth or clay being then thrown over the whole. The clay layers were built up of oval plates 6 to 9 inches long and ½ to 1 inch thick, many of which bore the impressions of the grasses, etc., with which they had been in contact. Large numbers of these plates were found. See F. G. Walker, "Roman Pottery Kilns at Horningsea, Cambridgeshire" (*Proc. Cambridge Ant. Soc.*, xvii, 1912, pp. 14–70).

[3] See below, p. 54.

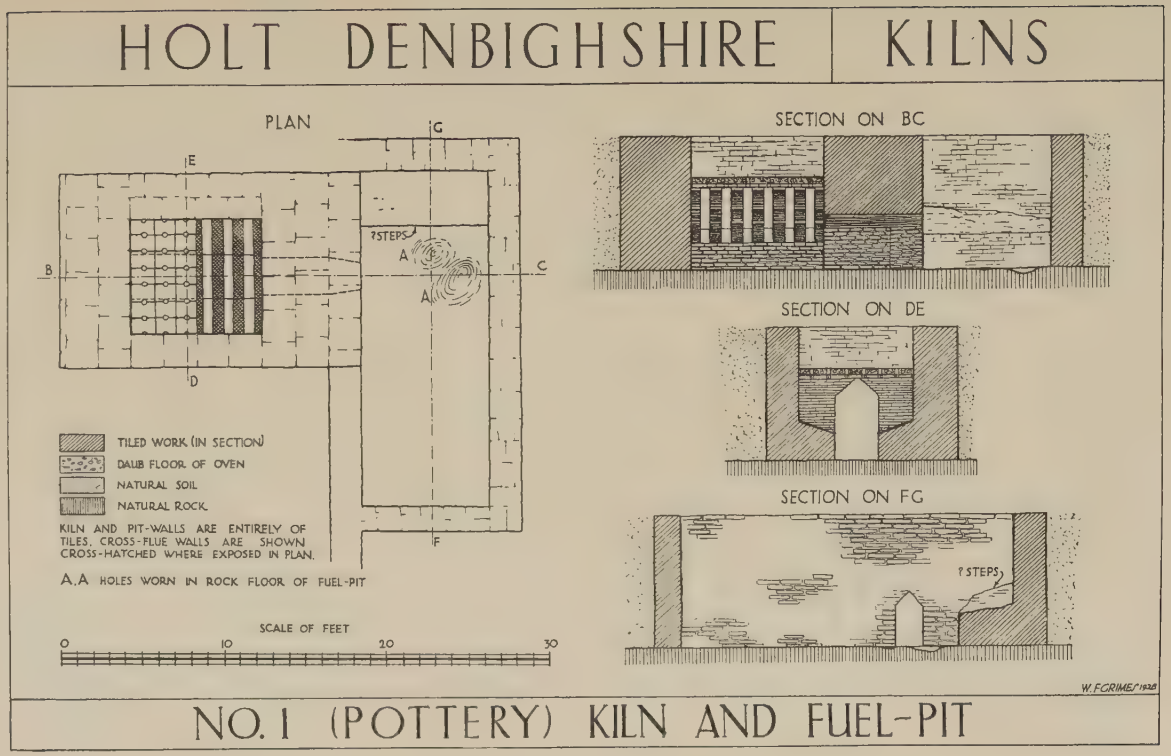

HOLT DENBIGHSHIRE KILNS
PLAN
SECTION ON BC
SECTION ON DE
SECTION ON FG
?STEPS
TILED WORK (IN SECTION)
DAUB FLOOR OF OVEN
NATURAL SOIL
NATURAL ROCK
KILN AND PIT-WALLS ARE ENTIRELY OF TILES. CROSS-FLUE WALLS ARE SHOWN CROSS-HATCHED WHERE EXPOSED IN PLAN.
A.A HOLES WORN IN ROCK FLOOR OF FUEL-PIT
SCALE OF FEET
0 10 20 30
W.F.GRIME/1928
NO. 1 (POTTERY) KILN AND FUEL-PIT

Fig. 21.

and economy of labour both in the provision of fuel and in actual stoking. In the same way, the operations of charging and drawing the kilns, which, as already stated, took place from above, were rendered correspondingly easier where large quantities of pottery and tiles were being continually handled. For stoking, the fuel, probably brought by slave labour from the surrounding oak forest, was kept conveniently near in the wood store which was situated, according to Acton, behind these kilns. The many temporary pits and floors (omitted from the plans—see above, p. 21) were within easy reach for the removal of pottery, etc., and the building of the kilns in pits had another advantage beside solidity, in that the oven floors, by being level with the surface, were charged and drawn with much greater ease than if the structure had been erected above the ground level (see above, p. 24, and below, p. 54). In addition, the grouping of the kilns closely together to form a coherent unit resulted also in economy of heat: the waste heat from the firing of any of the kilns in the plant serving to keep the remainder warm and dry. In detail as in general arrangement, the Holt plant is at present unique in the grasp shown of the many technical features of kiln construction.[1]

*No.* 1 (*Pottery*) *Kiln.*—No. 1 pottery kiln was situated at the south-west corner of the plant. The kiln was detached from the main unit. Its fire-hole opened towards the north-west into a separate fuel- and stoking-pit with tiled walls. The kiln itself, 18 feet long by 11 feet 9 inches wide, was built entirely of tiles, its long sides apparently being enclosed by the walls of the so-called "covered wood-store".[2] (Plans, Figs. 19 and 21.) The kiln was in excellent condition when discovered, and its floor was clearly daubed up ready for firing. The internal dimensions of the oven were 8 feet by 7 feet, the side walls being 2 feet and 2 feet 9 inches, the back wall 4 feet and the front wall 6 feet thick respectively.

This kiln differs considerably in many of its details from other kilns on the site. The arches of the fire-hole and main flue were here corbelled, and not, as in all the other kilns except No. 2 (pottery) kiln, built with voussoirs. The arches of the cross-walls were also higher than that of the main arch (5 feet to 3 feet 6 inches), and the main flue also varied in width. At

[1] Mr. Joseph Burton, an acknowledged authority on the subject, agrees that the Holt kilns differ very little from modern kilns of similar type, ". . . . the kilns were constructed to carry the heat as efficiently as possible to the outside of the kiln, a very necessary arrangement if good firing is to result".

[2] This point is not altogether certain. The plans available for comparison vary, some showing the kiln enclosed by the walls, others showing the walls abutting on the end of the kiln.

Fig. 22.—No. 1 pottery kiln. First stage in building oven-floor, showing cross-walls and flues, and arch of main flue, with two notched tiles in position.

*To face p. 34.*

Fig. 23.—No. 1 pottery kiln. Second stage in building oven floor, showing all tiles in position and partly daubed.

Fig. 24. No. 1 pottery kiln. Oven-floor fully daubed as found (the third stage).

*To face p. 35.*

the entrance to the fire-hole its width was 1 foot 8 inches, widening gradually to 2 feet 3 inches, which measurement it maintained for the length of the tunnel. In the kiln itself, however, the width of the main flue was 2 feet 7 inches throughout. The cross-flues numbered six, all 7 inches wide, and the cross-flue walls were built largely of roofing-tiles bedded in the silicious daub, as already described (above, p. 31). Single courses of thicker tiles were inserted at intervals.[1]

The transverse flues had the usual sloping bottoms, which, commencing at a height of 1 foot 6 inches from the floor of the main flue, sloped upwards at an angle of 19° to the horizontal.

The structure of the oven floor was unlike that of any of the other kilns. Rectangular tiles of two sizes (16½ by 11 inches, and 11½ inches square respectively), with semi-circular perforations 3 inches in diameter midway along their longest side, were used to form a base for the floor. These tiles were placed side by side, bridging the cross-flues so that the juncture of the perforations of each pair of tiles completed a circular vent-hole over the flue, 3 inches in diameter. The hole was then daubed over to a depth of between 3 and 6 inches with the usual silicious daub, the vent-holes being punched through the clay from below, according to Mr. Acton, and finished off with the fingers. Figs. 22–24 illustrate the stages in the process photographed (in reverse order) during excavation. The tiled walls of the kiln were standing to a height of 2 feet 6 inches above the oven floor.

An exactly similar structure was used in a tile kiln in the legionary tileries at Nied (Frankfurt-am-Main), excavated by Dr. G. Wolff in 1893.[2] In this kiln, which was approximately the same size as the Holt example, the flues were bridged with tiles 15 inches square, in which triangular holes were cut, the vent-holes thus formed being rectangular and approximately 3 inches in width. The spaces between these tiles were also filled in with daub and tile fragments which had been baked into a solid mass "as hard as building stone." (See also below, p. 39).

The fuel pit of this kiln was 8 feet deep, its floor being on the natural rock surface. The internal dimensions of the pit were 20 feet by 7 feet 10 inches, and its sides were lined with tiled walls 2 feet thick. Access to this pit was apparently obtained by means of steps. A podium of tiles which had

[1] For the sake of clearness these are rendered in the section on DE, Fig. 21, as of ordinary tiles.

[2] G. Wolff, "Die römischen Ziegeleien von Nied bei Hoehst a Main und ihre Stempel" (*Arch. für Frankfurt Geschichte und Kunst*, 1893, pp. 212–67).

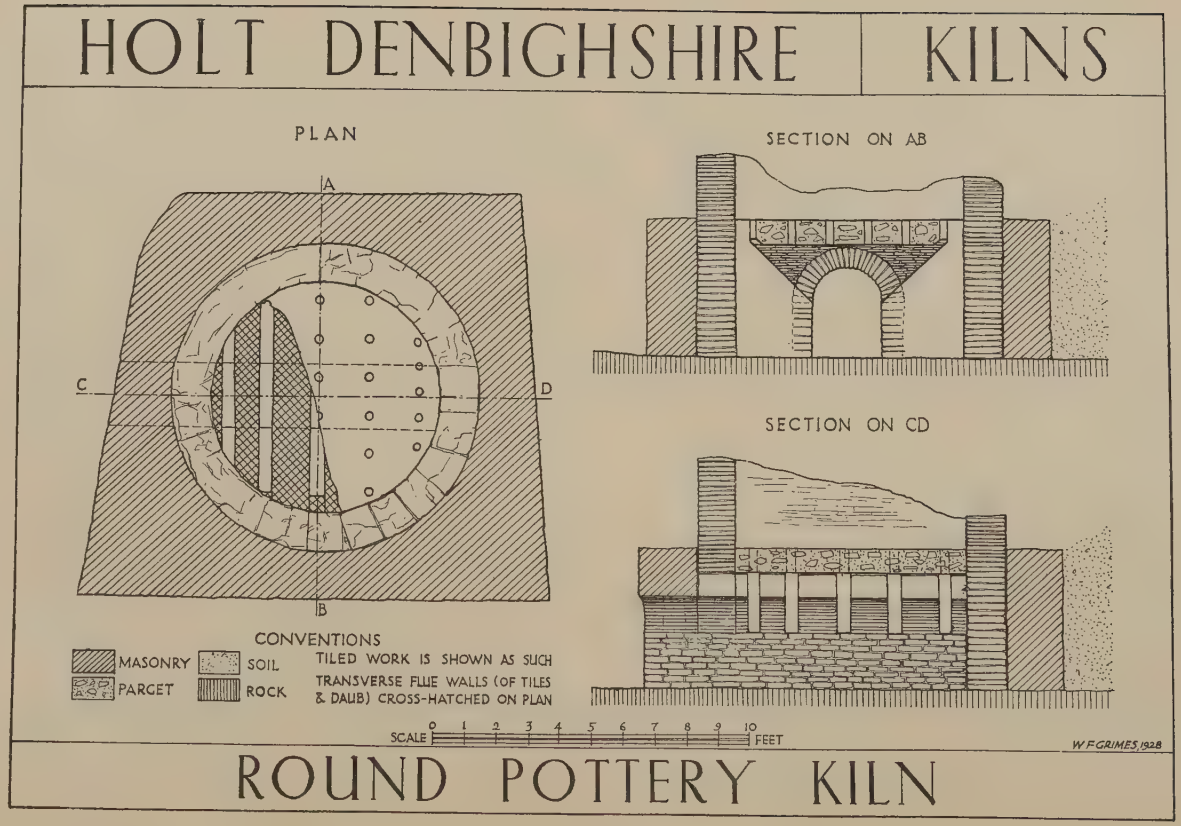

HOLT DENBIGHSHIRE
KILNS
PLAN
SECTION ON AB
SECTION ON CD
A
B
C
D
CONVENTIONS
MASONRY
PARGET
SOIL
ROCK
TILED WORK IS SHOWN AS SUCH
TRANSVERSE FLUE WALLS (OF TILES & DAUB) CROSS-HATCHED ON PLAN
SCALE 0 1 2 3 4 5 6 7 8 9 10 FEET
W.F.GRIMES 1928
ROUND POTTERY KILN

Fig. 25.

apparently carried these remained in part against the south wall of the pit. Beside this podium, and almost opposite the fire-hole of the kiln, two holes (plan, Fig. 21, AA) had been worn in the rock floor. These were explained as due to the dumping of fuel, by the dropping of logs on end from above.

The exact relation of this kiln to the remainder of the plant is uncertain ; its detached position suggests that it was a later addition to the original plan. Unfortunately, however, nothing is known of the details of its connexion with the other features of the plant (*e.g.* whether the pit-walls and the retaining-wall of the plant were of one build) to enable any conclusions to be drawn.

No. 1 kiln was used for the firing of pottery. The débris found around it included the fragments of stamped ware described below (p. 179),[1] and these were evidently " wasters " thrown out when the kiln was drawn.

*The Round Pottery Kiln and No.* 2 *Pottery Kiln.*—As already stated (above, p. 29) the round pottery kiln was undoubtedly an intrusion into the original plan, and its building was either the result, or the cause, of the rectangular kiln No. 2 behind it being abandoned. The two kilns were therefore closely connected, and may be described together.

The rectangular pottery kiln No. 2 (plan, Fig. 19) was built as a detached kiln at the end of the main line, a distance of 2 feet separating this kiln from the first of the large tile-kilns (Fig. 26). Its overall dimensions (including the sandstone casing used here as elsewhere) were 21 feet by 13 feet 6 inches. The kiln was lined with a 15-inch depth of tiles, and its internal dimensions were 17 feet by 8 feet 6 inches. The whole structure as excavated was very much ruined, and its condition, in contrast to that of the other kilns of the series, clearly indicated that its abandonment had taken place under different circumstances.

Most of the front part of the kiln, including the containing walls, was destroyed ; from the remainder, however, sufficient information was recovered to enable its chief features to be satisfactorily determined. The main flue was 2 feet wide, and there were apparently seven cross-flues, those remaining being 6 inches wide. In the bottoms of two of these flues half-pipes with an internal diameter of $3\frac{3}{4}$ inches had been inserted to

[1] Professor Haverfield in his article on Holt (*Arch. Camb.*, 1916, p. 228) appears to have misunderstood a statement of Acton's in connexion with the find-spot of this ware, which he places near the double flue-kiln. Acton, however, states (9.2.15) that the stamps and dies were found near this kiln, the stamped pottery coming from the débris around the " corner pottery kiln " (4.2.15), presumably the kiln just described.

give a good finish to the flue. The flues had the usual sloping bottoms (37° to the horizontal).

As elsewhere, various materials were noted in the building of the tiled walls in the interior of the kiln. The arches in the transverse flue walls over the main flue were corbelled, as with No. 1 pottery kiln, the top of the opening being 3 feet 6 inches, and the oven-floor 5 feet above the rock surface of the main flue. The floor also was of the usual materials ; it was 1 foot thick, and has been restored with six 3-inch vent-holes to the width of the kiln.

The reasons for the abandonment of this kiln are hard to discover. According to Mr. Burton, it was perhaps not a success since it was not so well constructed as the others. On the other hand, the débris around it contained much pottery which was well- and not over-fired,[1] and it may have been put out of action merely when the round pottery kiln was built, as the result of some change in the plan. No date, however, can be suggested for this change.

The contents of the ruined kiln, and the débris around it, indicate that No. 2 kiln was used for the firing of tiles, and especially of large pottery-vessels such as *dolia*, *mortaria*, etc.

*The Round Pottery Kiln*, the third and last of the detached kilns, was built at the north-west end of the stoke-hole, its sandstone casing butting on to the masonry flanking the fire-hole to No. 3 kiln. As uncovered it was almost complete, with the exception of the superstructure of the oven, which remained to a maximum height of nearly 3 feet (Figs. 25 and 26). It well illustrates the principle of the Holt kilns as a whole, and of the greater majority of all kilns of the period, whether round, oval, or rectangular in plan (see below, p. 53).

The internal diameter of the round kiln was 7 feet 8 inches. Its tile lining was 15 inches thick. The kiln, as usual was enclosed in a sandstone casing, of trapezoidal shape on plan.

The fire-hole faced east, along the line of the main stoke-hole, its width being 2 feet and its height to the top of the arch 2 feet 10 inches. The interior of the kiln was divided by four cross walls into five flues, 5 inches in width (Fig. 27 [2]). The cross flue walls were built, as usual, of tiles, and carried on arches over the main flue. The cross flue bottoms sloped upwards from the main flue at an angle of 45° to the horizontal.

The oven floor, 9 inches thick, was composed of the usual

[1] *Acton Letters*, 9.2.15.

[2] This photograph well illustrates the type of daubed tilework frequently used in the construction of the kilns : shapeless tile-fragments daubed together by clay, which on firing the kiln were baked into a solid homogeneous mass.

Fig. 26.—Part of the main kiln-plant. A, floor and superstructure of round pottery kiln; B, the ruined No. 2 pottery kiln; C, the outer casing of No. 3 tile-kiln, with oven floor beyond.

Fig. 27.—The round pottery kiln: the cross-walls, showing material used in construction, and cross flues. *To face p. 38.*

Fig. 28.—No. 5 tile kiln: view of kiln with oven-floor intact.

Fig. 29.—No. 5 tile kiln: view of oven-floor partly stripped, showing tiles used to bridge cross-flues. Note V-ended brick used to repair floor.

*To face p. 39.*

parget of tile fragments and silicious clay daub. The vent-holes were circular with a diameter of 3 inches. Five holes were employed over each of the two outer and six over the three inner, and therefore longer, flues. The finds made in the interior of the kiln and in the kiln débris surrounding it, as well as its size, showed the round kiln to have been used for the firing of pottery.

*Nos.* 3–5 (*Tile*) *Kilns and No.* 6 (*Pottery*) *Kiln.*—The large tile kilns formed the centre of the system ; with No. 6 (pottery) kiln, they show no structural features of outstanding interest or importance, and since they closely resemble one another they are here treated together.

With the small pottery kiln (No. 7) these kilns formed a single unit, each being complete in itself, but the whole series being contained in the one casing of masonry.

The same general rules of construction were observed in these kilns as in the others. They were of large size : 14 feet square ; 17 feet 6 inches by 13 feet 6 inches., 17 feet 6 inches by 14 feet 6 inches and 14 feet 7 inches by 12 feet 3 inches respectively (internal dimensions), and the tiled walls enclosing each were thicker than those employed elsewhere.

The cross-flue walls were carried on arches over the main flues. The walls as before were built of a variety of tiles, extensive use being made of the silicious daub already mentioned. Fig. 20 illustrates well the use of roofing tiles in the building of these kilns. Here one of the cross-flue walls of No. 4 tile kiln is shown built largely of roofing tiles bedded on the clay daub. From this kiln was recovered the roofing-tile fragment bearing the Julius Aventinus inscription (below, p. 133).

The cross-flues had the usual sloping bottoms, the angles formed with the horizontal being 30°, 40°, 30°, and 20° respectively.

The entrances to the main flues were arched, and flanked in each case by large breast-works of sandstone masonry. In No. 5 tile kiln the entrance had been paved with a large flat tile, to provide a good bed for the shovelling of ashes, etc., from the combustion chamber.[1]

The structure of the floors in these kilns was comparatively simple (Fig. 29). Large tiles were used to bridge the cross-flues, provision having first been made for vent-holes.[2] The

[1] Roofing-tiles were used at Nied for a similar purpose. See G. Wolff, reference above, p. 35.

[2] In No. 1 kiln already described (above, p. 34) this device is advanced a stage further, in that the tiles used for bridging the flues are specially made for the purpose, and provided beforehand with

whole was then daubed over, the vent-holes being made finally. Unfortunately, the exact dimensions and spacing of these vent-holes is not known. They are stated by the excavator to have been a little over 2 feet apart, from centre to centre, the measurement being determined apparently by the size of the largest tiles made at Holt.[1] This spacing allowed the tiles to be packed between the holes for the free movement of the hot gases.

No. 6 kiln was of similar construction to these tile kilns, but for this kiln details of the size and arrangement of the vent-holes are available. In this case the vent-holes were rectangular, their dimensions being 9 by 4 inches and the spacing between each being 1 foot. No. 6 kiln was used entirely for the firing of pottery. The types recovered included a number of examples of small globular cups (below, p. 166, type 193, etc.).

*No.* 7 (*Pottery*) *Kiln.*—This small pottery kiln completed the series. It was included in the masonry casing which held all the kilns of the main unit. Its internal dimensions were 9 feet by 8 feet, and in its structure it resembled the other kilns of the series, except for an elaborate arrangement of the sub-floor to the oven (Fig. 30).

The feature of this structure was the use of V-ended bricks, each 1 foot 9 inches long, with a width of 6 inches and a thickness of 2–3 inches, to bridge the transverse flues. These bricks were carried across the walls in pairs, each pair being separated from the next by a quarry tile 3 inches thick, the whole being thickly bedded in silicious daub. The structure was apparently intended to serve as the permanent sub-floor of the kiln. The oven floor was laid upon it, and was built of tiles and the usual refractory daub, which would be repaired or relaid after each firing. The vent-holes were $2\frac{1}{2}$ inches square and on the average 9 inches apart. Two lines of vent-holes set between 6 inches and 9 inches apart, served each flue.

The elaborate structure of this kiln seems to be without a parallel in any other kiln of the period. Like a number of other features in the Holt plant, it appears to be an independent experiment on the part of the Holt kiln designers. The intention was probably the provision of a sub-floor of a sufficiently permanent character as to make extensive rebuilding of the oven floor after each firing unnecessary.

vent-holes of the required size. Tiles similarly perforated for special use in pottery kilns have been found elsewhere, *e.g.* in the Nied tile-kiln already quoted in connexion with No. 1 kiln, and also at Castor and other places (below, p. 57).

[1] Letter to Mr. Heywood Sumner, April, 1921.

Fig. 30.—No. 7 pottery kiln : the sub-floor of kiln, showing use of V-ended bricks. The front wall and main arch of the kiln are shown on the right.

*To face p. 40.*

### (vii) *The Clay-pits.*

As already stated (above, p. 10), certain hollows to the south of the kilns in the field adjoining the Hilly Field and between that and Holt Hill (general plan, Fig. 2) were regarded by Acton as the clay-pits of the works. No excavation was undertaken to test this assumption, but it is at least highly probable that these pits were used for this purpose, and one at any rate has every appearance of having been artificially excavated at some period. Such pits are frequently found in connexion with Roman ceramic works—*e.g.* at Rheinzabern, where they seem often to consist of main shafts with other shafts travelling from them.[1]

## III.—THE PLACE OF HOLT IN THE ROMAN OCCUPATION.

In the two sections below an attempt is made to summarize, first, the part played by Holt in the Roman occupation, as far as the evidence at present available for the distribution of its products will allow; secondly, to indicate the extent to which the occupation of the works-depôt falls into line with the broad movements which are now recognized as the main features in the military history of Roman Wales.

The twofold character, military and industrial, of the works has already been indicated. Its close connexion with the Twentieth Legion is shown by the occurrence of centurial stones in its building, and by the general use of legionary stamps and antefixes. The general layout of the site, at least in its most important structures, also contrasts strongly with that of privately maintained industrial centres elsewhere. Thus the plan of the workmen's barracks may be said to show some affinity to the barracks of the legionary fortress. But in any case it clearly indicates a corporate life in which a number of men, presumably the potters and workmen who formed the main bulk of the settlement, lived under some form of discipline. The large-scale construction is in keeping with the size and importance of the legionary fortress whose needs it was established to supply.[2]

[1] Ludowici, iv, p. 139.

[2] The Holt kilns undoubtedly continued in use over a long period, and the works-depôt was maintained, owing to the greater resources available, with an independence of outside influences which is in marked contrast to the frequent changes of the private industries elsewhere in this country. An aspect of this may be observed in the effect of the fuel supply on the New Forest potters. There (as also at Castle Howard)

Little can be said as to the personnel of the works. Its builders at least were legionaries, and the pottery produced is of that essentially practical character which is usual on Roman military sites. Presumably the works would have been under the ultimate charge of the *præfectus castrorum*, to whom the *architectus* and *mensores*, as well as other "specialists", were responsible, and whose cares included the laying out and preservation in good order of the fortress.[1] This is if anything supported by the tile-stamp, No. 32, p. 143, below, and possibly by No. 14, in both of which reference is apparently made to a *praefectus*.

Parallels for the Holt works-depôt can at present only be cited on the Continent. Tileries for the supply of building materials to the legionary and auxiliary forts were of course regularly established. Such works were maintained at Rheinzabern and Nied,[2] as well as at Bonn [3] and elsewhere.[4] These tileries, however, do not appear to have included pottery in their products. But there can be no doubt that the counterpart of Holt for the fortress of Caerleon made pottery as well as tiles for the use of the legionaries, as is shown by the occurrence in the fortress of a "legionary ware" closely similar to a distinctive type produced at Holt. The manufacture of pottery as well as tiles by the legionaries in Britain, while on the Continent the legions made only their own tiles, may perhaps be due to a lack of a sufficient privately-produced local supply. The extensive pottery works of all types, conveniently

the life of the industry in each locality was determined by the supply of fuel—mostly brushwood—available. When this supply was exhausted the potters moved their small easily-constructed kilns to a fresh site. With the limited resources of this industry, most of the transport of which was probably carried out in pack-horse, it was much more convenient to move the kilns than to transport fuel over any distance. At Holt, on the other hand, large timber from the neighbouring forests could be easily handled, and the large kilns easily maintained, by the slave-labour which was probably available.

[1] Parker, *Roman Legions*, p. 192 f.; v. Domaszewski, *Die Rangordnung des römischen Heeres*, pp. 46–7.

[2] See Ritterling in Ludowici, iv, pp. 125–7, and reference above, p. 35 (for the Nied tileries). The Rheinzabern tileries were established during Augustan times, for the supply of the Mainz legions, but the practice of stamping their tiles was not taken up by the legions until the reign of Claudius, at latest *c.* 50 A.D. The stamps of the various legions do not occur at Rheinzabern after 83 A.D., with the rising of the Chatti, when the tileries were moved forward with the forts to the right bank of the Rhine, and established at Nied. The tileries at Nied therefore date from 83; they were continued with short breaks to the latter part of the reign of Antoninus Pius, and again under Caracalla.

[3] By Leg. I Minervia; *Bonn. Jarhb.*, heft 132, pp. 264 ff.

[4] For other sites see refs. in Schumacher, *Siedelungs- und Kulturgeschichte der Rheinlande*, ii, pp. 259–62.

situated to the military centres, made it unnecessary for the German troops to manufacture their own pottery. In Britain, on the other hand, the local industries were of much smaller size and range.[1] They were also situated at a distance from the military zone. And the legions, therefore, made themselves independent of local supplies, and were freed of the expense of large-scale importation from the Continent, by providing for regular production within easy reach by their own workmen.

### 1. The Distribution of Holt Products.

The evidence at present available suggests that Holt wares were intended, if not exclusively, at least primarily, for the legionary fortress. From the limited areas available for excavation at Chester, quantities of pottery closely resembling Holt types in ware and form have been recovered. Legionary stamps and antefixes are recorded from Chester as at Holt, although many of the Holt types have not yet been found there. So, too, a large proportion of the sporadic finds made in the city appears to derive from the same source. Where possible these finds are referred to in the pottery-lists below (pp. 143 ff.) ; but while suitable material for reference is comparatively small, because of the restricted and frequently disturbed nature of the site, the general impression left by examination of a large mass of the Chester material is that at any rate a considerable portion of the coarse pottery was derived from Holt.[2]

On the other hand, other excavated sites in North Wales have yielded little or nothing which can be assigned with any certainty to Holt.

Of North Wales military sites, two only, Segontium and Kanovium, have been thoroughly examined. At *Segontium*, no stamped tiles were found either in the fort (where roofing tiles were in general use down to the third-century occupation under the Severi) or in the bath-buildings which have been unearthed, though not systematically explored, at various periods.[3] The absence of stamps is not indeed conclusive, since all the tiles turned out at Holt were not stamped, and the

[1] Or in any case their periods of greatest prosperity and production were of comparatively late date.

[2] In this respect, I owe a deep debt of gratitude to Professor Robert Newstead, F.R.S. Professor Newstead very kindly placed his unrivalled knowledge of Roman Chester at my disposal, and besides readily answering all my inquiries, has given me full access to all his carefully-kept notes and collections.

[3] Wheeler, *Segontium*, pp. 24 and 103–4.

Julius Aventinus graffito (below, p. 133) does in fact suggest connexion between the two places. As suggested by Wheeler, Julius Aventinus may have been one of a detachment sent to bring tiles from the legionary kilns. The suggestion is perhaps supported by the probability that during the earlier periods, when local quarries were undeveloped, much of the building stone was derived from the legionary quarries near Chester,[1] and the same procedure may have been followed in the case of tiles. But there are two uncertainties :

1. Between 124, when the Cohort first appeared in this country, and *c.* 210, when an inscription records its presence at Segontium,[2] its movements are unknown ; and since the date of the Holt graffito is uncertain, it does not necessarily follow that the main body of the cohort was at Segontium when the graffito was written.
2. During the early third-century occupation at Segontium terra-cotta roofing-tiles were replaced by local slates, so that roofing-tiles at least would not have been brought from Holt. This, however, would not restrict the demand for other tiles, which were perhaps less likely than roofers to bear legionary stamps.

The point would be definitely settled if the Holt graffito could be dated to the third century. But on the whole the evidence for the use of Holt tiles at Segontium is indecisive. In the case of the pottery, however, there seems to be no doubt that while isolated examples of Holt manufacture occur at Segontium, there was no kind of regular traffic between the two places. The pottery figured by Wheeler includes no types markedly resembling Holt wares, and the other material available to the writer yielded only isolated examples of Holt manufacture.[3]

The excavation of *Kanovium* has yielded similar results. Although the effective occupation of the fort (*c.* 80–122, prolonged in part until *c.* 140 [4]) coincides with the period of maximum production at Holt, Mr. Baillie Reynolds informs me that no stamped tiles have been found in it, and that only

[1] Wheeler, *op. cit.*, p. 103.
[2] CIL VII, 1195 ; *Segontium*, p. 125.
[3] The bulk of this material is exhibited or stored in the Museum of the University College of North Wales, Bangor. An unfortunate chain of accidents prevented the examination of the material in store on the only occasion available to the writer, and the above remarks therefore apply only to the material exhibited and to that still preserved in the National Museum of Wales. It is hoped at a later date to examine the remainder of the Segontium pottery at Bangor from this point of view.
[4] *Arch. Camb.*, 1929, pp. 94–9.

one or two sherds at most appear to be of Holt manufacture. On the other hand, stamped tiles of the Twentieth Legion were found in the bath-building by earlier excavators,[1] so that in this case at least supplies presumably were drawn from Holt.

The precise nature of the Roman site at *Ffrith* in Flintshire has yet to be determined, but from its proximity to Holt it might be expected that Holt products should occur there. Legionary stamped tiles were in fact found here in the sixteenth century,[2] and Acton states, of pottery from the site seen by him in 1910, "The sherds, with the exception of the Samian and amphora fragments, could have come from pots of local [? = Holt] make."[3]

Stamps of the Twentieth Legion were found at *Caersws*, as well as others of an auxiliary cohort as yet unidentified.[4] Holt types seem to be rare amongst the pottery.

Outside Wales, isolated examples of stamps of the Twentieth Legion have occurred at *Wilderspool*,[5] *Manchester*,[6] and also at *Whittlebury*,[7] Northants. The first two places lie within the Chester area, but the Whittlebury stamp is quite unexplained. It cannot, however, be regarded as indicating the line of advance of the Twentieth Legion, nor can the stamp itself be assigned an early date because of its position. More information is needed regarding the site of the find.

The evidence set out above is incomplete, and needs to be supplemented by further study of finds from sites in the area. But as far as it goes, it indicates that in the distribution and use of products from the legionary works-depôt, no hard and fast rule was observed.[8] Undoubtedly the

[1] Haverfield, *Military Aspects of Roman Wales*, p. 29, n. 18, for references.

[2] Haverfield, *op. cit.*, pp. 24–6; M. V. Taylor, *Flints. Hist. Soc. Journ.*, ix, pp. 11 ff.

[3] *Acton Letters*, June, 1910.

[4] Mentioned by Haverfield, *op. cit.*, p. 50. The legionary stamps do not appear to be included in the Caersws material now in the National Museum of Wales.

[5] May, *Journal of Hist. Soc. of Lancashire & Cheshire*, 1899, p. 32 and Pl. V, 2. This stamp, thought by May to be a *Devensis* type, is not represented at Holt. From the illustration given the so-called D [—Devensis] looks more like a triangular line enclosing the end of the label.

[6] Bruton, *Roman Fort at Manchester*, p. 150. The stamp is of type 2 below, p. 140.

[7] See below, p. 139.

[8] This, at least, seems to have been the case with the tiles, and the practice can be paralleled on the Continent. The pottery, however, seems to be in rather different case. Its apparent rarity at Segontium and Kanovium suggests that whether tiles were drawn from the legionary stores or not, only chance pieces of pottery brought perhaps by the men in charge of the consignments of tiles—found their way to the forts.

main supply was intended for Chester. The practice, as far as the auxiliary forts were concerned, varied according to local conditions. In some cases, kilns were established near the fort, when supplies of clay suitable for tile-making were available. Elsewhere, where the same facilities did not present themselves, supplies were drawn direct from the base. Both at Segontium and Kanovium, supplies of building-stone were apparently obtained from quarries, presumably those of the Legion, in Cheshire,[1] and parallels for both practices relating to tiles can be cited from Wales.

Thus the auxiliary forts at *Caer Gai* and *Tomen-y-mur* were supplied by tileries, as yet unexcavated, at Pen-y-stryd, Merionethshire,[2] and a tile-kiln was also found associated with the fort at *Gelligaer*, Glamorgan.[3] So, too, the presence of tiles bearing the stamps of auxiliary troops on other sites (such as *Caersws*) witnesses to the existence of other kilns which have not yet been discovered. At the *Brecon Gaer*, on the other hand, tiles were drawn from the kilns of the Second Legion,[4] and the stamps, of which quantities were found, can be paralleled in the legionary fortress at Caerleon.

In spite of the essentially military character of the Holt works, it is natural to expect that some at least of the pottery should find its way to neighbouring civil sites, and particularly to *Wroxeter*. The Wroxeter pottery does, indeed, include types which both in form and fabric, resemble Holt wares. But the extent of their occurrence can be judged only by a survey of the Wroxeter pottery as a whole.

The above survey is of course incomplete, but future work will probably fill in the gaps, and perhaps clear up doubtful points in connexion with Holt itself.

The accompanying catalogue of the pottery types has been treated in some fulness, in order that future excavators in the area covered by the Chester command may have some opportunity of judging how far their pottery may be assigned to the Holt works. The study of Romano-British ceramics has made great strides in the direction of typological and chronological classification ; but its sources and places of manufacture have still very largely to be worked out. Until such work is done in some thoroughness the survey of Romano-British culture must inevitably be incomplete ; and opportunities of studying fully the output of an individual industry have up to the present been of rare occurrence.

[1] Wheeler, *Segontium*, p. 103 ; Kanovium, 3rd Report, *Arch. Camb.*, 1929, p. 94. [2] *Arch. Camb.*, 1924, p. 202, and below, p. 75.
[3] *Cardiff Nat. Soc. Trans.*, 1913, pp. 1 ff., and below, p. 68.
[4] Wheeler, *Brecon Gaer*, pp. 106 ff.

## 2. The Historical Position.

Since Haverfield's survey of the military history of Roman Wales,[1] systematic inquiry has done much to clarify or to remove the doubts and uncertainties of twenty years ago.

The excavation of a number of auxiliary forts in different parts of the system, together with that of extensive areas within the legionary base-fortress of Caerleon has evolved a framework of broad facts which may be modified, but is not likely to be upset, by future work.[2] It will be of interest to see how far the occupation of Holt fits into this framework. But for reasons already mentioned (p. 2) the conclusions must invariably lack preciseness. The decisive evidence of a single well-stratified coin or pottery-sherd is replaced by the uncertainties and inconsistencies of collective study.

The military occupation of Wales is now generally regarded as falling into four main phases,[3] following the final conquest of the country, which, commenced by Ostorius Scapula between 47 and 50 A.D., was finally completed after many indecisive years, by Frontinus and Agricola (74–8). Briefly described, these phases are as follows :—

i. *c.* 75–140 A.D. : the period of intensive occupation following the establishment throughout Wales of a series of auxiliary forts based on the legionary fortresses at Chester and Caerleon. Between this and the next phase, the Antonine period was one of inactivity during which many forts were either much reduced or completely abandoned.

ii. *From the early third century on.*—The second phase of offensive action, dating from the time of the Severi, and rendered necessary by internal disturbance following the long Antonine period during which the forts had gone unoccupied. The exact duration and intensity of this occupation is at present uncertain.

iii and iv. *Late third–fourth centuries.*—Periods of defensive action against the pressure of outside invasions, manifested particularly by the building of a fort of " Saxon

[1] " Military Aspects of Roman Wales," *Cymmrodorion Society Transactions*, 1908–9.

[2] Certain modifications, the outcome of local circumstances, may be expected to appear. Thus the Forden Gaer (*Arch. Camb.*, 1929, pp. 137 ff.) stands in direct contrast to the other forts so far excavated, and shows an alternation with the occupation of the neighbouring fort at Caersws, which suggests that the former was maintained, when Caersws, like other forts, was abandoned, to protect Wroxeter from any danger from the west.

[3] Developed by R. E. M. Wheeler, in " Segontium," *Y Cymmrodor*, Vol. xxxiii, and summarized in *Prehistoric and Roman Wales*, pp. 220 ff.

Shore " type at Cardiff, *c.* 300, and the rebuilding of Segontium *c.* 350.

1. *The foundation of the works-depôt.*—For the immediate problem phase i may now be treated in some detail. This phase may be sub-divided into two periods. In the first of these, which ended *c.* 100, the forts are characterized by earthen ramparts with timber-buildings. The second is one of reorganization and reconstruction, due in part, it may be, to local disturbance, but in a wider view to be recognized as part of the general reorganization of the frontier defences which was first set on foot by Domitian and Trajan, and finally completed by Hadrian. This reorganization involved a redistribution of forts in some places, and a reduction in the size of others, but especially in a general replacement of the earthen ramparts and timber buildings of the first century by defences and buildings of stone.

The date of this reconstruction is, indeed, well fixed, within a few years, to the first ten or fifteen years of the second century. At Segontium and Kanovium in the north, in mid-Wales at Caersws, and in South Wales at Brecon Gaer and Castell Collen, the evidence for the auxiliary forts is consistent.[1]

The legionary fortress of Caerleon shows the same sequence. Excavation in various parts of the fortress, in the defences, in the barrack-buildings of the retentura (Prysg Field), and in the central zone (Jenkins Field and School Field) has revealed that the timber buildings and clay bank of *c.* 70 were replaced at various times between 100 and 115 by stone structures.[2]

At Chester, rarer opportunities of excavation have naturally produced less abundant evidence. But so far as it goes, the evidence is consistent with that obtained elsewhere. Excavation of the barrack-buildings of the Deanery Field [3] has revealed two distinct horizons, the first in association with the

[1] *See* the reports on the excavation of these forts : Segontium : Wheeler, *Y Cymmrodor*, xxxiii (1923) ; Kanovium : Baillie Reynolds, *Arch. Camb.*, 1929, pp. 61 ff. (3rd report) ; Caersws : *Cymmrodorion Society's Trans.* 1909-10, pp. 1-3 ; Brecon Gaer : Wheeler, *The Roman Fort near Brecon* ; Castell Collen : Evelyn-White, *Arch. Camb.*, 1914 pp. 1 ff.

[2] Detailed report of Jenkins Field in *Arch. Camb.*, 1929, pp. 237, ff, Summaries of results obtained are given in the *Bulletin of the Board of Celtic Studies*, iv–v (1927–9), but I have to thank Mr. V. E. Nash-Williams for much information relating to this and to other points in this section.

[3] Newstead, Reports (I and II) on the excavations in the Deanery Field, Chester (*Annals of Archæology and Anthropology*, Liverpool University, xi and xv). Later work carried out since 1928 has confirmed this dating.

post-holes of timber buildings, the second with the walls of the later stone barracks by which they were replaced. The change was regarded as having been made towards the closing years of the first century, the earlier timber structures dating to the period 70–80 A.D. The limited evidence of Chester, therefore, agrees with that obtained elsewhere.

Bearing in mind the purpose for which Holt was established —the supply of the legionary fortress with building-materials —it is natural to expect that the occupation of the works-depôt should show some reaction to developments and events in the fortress itself. In other words, the establishment of the tileries should have taken place when the demand for tiles and building materials was created by the rebuilding of the fortress in stone, at or towards the close of the first century.

The evidence supporting this theory may here be tabulated :

(i) *Coins.* Domitian (82–96) is represented by 19 coins, compared with 10 of Vespasian (69–79). This distribution contrasts strongly with that on sites which were established *c.* 75, and maintained intensively throughout the first century into the second. On such sites the coins of the earlier Emperor frequently outnumber those of the later by two to one.[1] Unfortunately, owing to corrosion, the condition of the coins gives no indication in many cases of their length of circulation.

(ii) *Samian Ware.*—Drag. 29, which disappeared in this country towards the end of the first century, is represented by only one fragment. In view of the abundance of Samian ware this absence cannot be altogether accidental. Decorated wares of Flavian type are also comparatively rare (28, of which 17 are late Flavian, compared with 59 Domitian–Trajan ; at Brecon Gaer, established *c.* 75, the numbers were 91 Flavian to 41 Domitian-Trajan). The majority of the potters' stamps belong to the Flavian period, and there are one or two fairly early plain-ware forms; but the striking facts about the Samian ware are the absence of Drag. 29, and the predominance of late first–early second-century decorated wares over those of Flavian date.

(iii) *Coarse pottery.*—The coarse pottery shows a predominance of forms of late first–early second-century type. But specifically earlier forms are wanting.

This evidence, it is seen, is not of the strongest. It has weaknesses, dependence upon chance, and lack of precision, which are inherent. But its range is certainly later than that of any of the other Welsh sites known to have been established

[1] As at Newstead, 50 to 37 ; Segontium 20 to 10.

*c.* 75 A.D., and the absence of Drag. 29 may perhaps be regarded as decisively in favour of a late first-century date. Such a date would be in keeping with the evidence of other sites, as set out above. By it, the establishment of the elaborate tileries at Holt, with an output which must have been considerable, would fit logically into the scheme as the natural precursor of the task of consolidation and reconstruction in which Chester shared with other sites at the turn of the first and second centuries.

2. *Second-century occupation.*—As already stated, the first-century occupation of the Welsh military sites was continued unbroken into the early part of the second century. The phase ends generally *c.* 140 A.D., when the concentration of troops on the northern frontier for the campaigns of Lollius Urbicus took place, although at least in some cases reduction had commenced before that date.[1] This reduction of the military occupation was complete throughout the second century, as far as the auxiliary forts were concerned.

In the legionary fortresses, the occupation, though very much slighter than formerly, was unbroken. At Chester, the Deanery Field site was occupied throughout the second century, and on into the fourth, although the later periods were much more sparsely represented. Excavation has not yet determined the extent or exact date of the reduction, but the general coin-finds from Chester undoubtedly show a marked falling off in numbers of Antonine coins,[2] and it is reasonable to suppose that reduction coincided with that of other sites in the system. With this sequence the evidence for Holt here set out is in complete agreement.

(i) *Coins.*—Trajan and Hadrian are represented by 16 coins between them, while 5 others cover the remainder of the century down to Commodus (175–92).

(ii) *Samian ware.*—In the decorated wares the period Domitian–Hadrian is represented by 113 pieces out of 173 illustrated (almost $\frac{2}{3}$), 28 pieces are of Hadrian–Antonine and 5 of Antonine date. In the potter's stamps 13 out of 39 belong to the first period, 5 to the second, and there is one Antonine. The plain wares are in agreement, but show a larger number of Antonine examples (as in the case of Drag. 31 and its variant Ludowici Sb, below, p. 119). There are also one or two types

[1] *e.g.* at Brecon Gaer, where the stone buildings were never finished, and also at Kanovium and in the legionary fortress at Caerleon. This reduction is dated *c.* 120, and is connected with the building of Hadrian's Wall. But the main and, for the auxiliary forts, final reduction seems to have taken place in 140.

[2] *Cat. of the Roman Coins in the Chester Museum,* 1923.

(*e.g.* Drag. 32 and 45) which carry the occupation into the third century.

(iii) *Coarse pottery.*—The predominance of pre-Antonine types is very strongly marked (below, p. 143). But Antonine and later forms of the cooking-pot, " pie-dish ", etc., though much less abundant, are still well represented, and carry the occupation into the third century.

The trend of this evidence, with its abundance of early second-century as compared with later material, clearly shows that Holt shared with other Welsh sites in the general reduction of the Antonine period. But like the legionary fortress with which it was closely linked, the site was not abandoned.

The coins and pottery, though less abundant, carry the occupation through the century. The structural evidence if anything adds weight to this. The building-plans throughout are of one design ; they show no signs which can now be detected of rebuilding or alteration which would almost certainly have resulted had the site been neglected, and its buildings allowed to lapse into decay for any length of time.[1]

It is tempting to regard the abandonment of the double-flue kiln (above, p. 27) as part of the reduction consequent on decreased demands on the works at this time. On the evidence, scanty it is true, it was suggested that this kiln was given up some time early in the century, but, as the built-up arches showed, with every intention of its being re-used. For economy of working, the double-flue kiln would probably have been the first to be abandoned. It was far the largest of all the pottery kilns, and its isolated position, away from the main kiln plant, would have made it uneconomical to work with depleted labour. The only evidence now available makes it impossible definitely to prove or disprove this, nor can it be said whether any of the kilns in the main plant were given up at the same time, to be brought into use again later. But it is at least a possibility to be borne in mind.

3. *Third-century occupation and the end.*—The second offensive movement in the general scheme (Phase II) is dated to the reign of Septimus Severus (died 211). Its duration and extent are at present uncertain ; but it has left its mark in the north on the Deva–Segontium road, in mile-stones, in the extensive reconstructions at Segontium, and in the rebuilding of the north wall of Deva with tombstones from a neighbouring cemetery, which probably dates to this time.

[1] That rebuilding took place at some time is suggested by the occurrence of a centurial stone built upside-down into a wall of the barrack-building (*Acton Letters*, 9.2.15).

The evidence for occupation after the second century at Holt is as follows :

(i) *Coins.*—The first 40 years of the third century are blank. The rest of the century is represented by 5 coins ranging from Gordianus Pius (238–44) to Allectus (293–6), two of which are surface-soil finds. The fourth century is represented by 6 coins of which 5 are Constantinian. Of these three are known to be surface soil finds.

(ii) *Pottery.*—Many of the common forms which are characteristic of the later periods had a long life, and cannot be closely dated. Some of the cooking-pots, however, are at least of third-century date, as also are one or two of the hooked rim mortaria. Hammer-head mortaria are represented by five examples, and flanged mortaria by only one. One or two Samian forms may also extend into the third century.

(iii) *Tile-stamps, etc.*—Although now incompletely represented, there were originally among the tile-stamps examples of the ANTONINIANA type (below, p. 142). In the latest discussion of the subject Mr. S. N. Miller dates this type to the period 212–222 (*Caerleon Amphitheatre*, pp. 159 ff.). These stamps are therefore evidence for the manufacture of tiles at Holt in the early third century. The Julius Aventinus graffito may belong to the same period, since his cohort is known from an inscription to have been at Segontium at this time (but see above, p. 44).

The evidence for the third century is therefore of the slightest. The tile-stamps, however, and perhaps the graffito, seem clearly to indicate that Holt played its part in the renewed activity of the early part of the century. But it seems impossible, in the slightness and uncertainty of the evidence, either to estimate the extent or the duration of this activity.

The late third–fourth century occupation was in any case slight. The handful of coins, half of which at any rate were surface-soil finds, is backed up by as little pottery. They may represent the casual visits of wanderers who turned aside from the road to examine the now derelict works—or may even be regarded as fresh support for the now well-known caretaker theory.

In sum, therefore, the evidence suggests that the works-depôt was established towards the end of the first century, its purpose being the supply of tiles for the rebuilding of the legionary fortress in stone about that time Its history agrees with that of other military sites in that occupation was intensive during the early second century, falling off during the Antonine period, when the military forces of Wales were mainly concentrated on the northern frontier Holt shared with other

sites in the activity of the early third century, and the occupation in all probability continued, though on a small scale, into the century. But the evidence available does not enable a date to be fixed for its final abandonment.

## IV.—AN ASPECT OF THE ROMANO-BRITISH POTTERY INDUSTRY.

In this section an attempt is made to classify the various types of kilns used in Roman Britain for the manufacture of pottery and tiles. The subject is one which has received little attention in the past; and the classification is rendered more difficult by the frequent absence of adequate details relating to the kilns found, and also by the fact that the nature of the remains themselves has often not been properly understood.

The list which forms the second part of the section is drawn up primarily with a view to the structural features of the sites. Much remains to be learned before a general survey of the Romano-British ceramic industries can be attempted. The origin of much of the pottery used on Roman sites is still largely unknown. In the meantime the study of one aspect of the problem should help towards the ultimate solution of the whole.

### I.—Types of Romano-British Kilns.[1]

Roman kilns, whether for tiles or pottery, fall mainly into three types:

A. Updraught kilns.
   1. Round or oval kilns.
   2. Rectangular kilns.
B. Horizontal-draught kilns.
C. Clamps.

### A. *Updraught Kilns.*

Kilns of this type consist of two superimposed chambers: the lower, the combustion chamber, in which the fuel is burned, and the upper, the oven, in which the pottery to be fired is placed. These two chambers are separated by an oven floor pierced with vent-holes, by means of which the heat is brought into contact with the pottery. The oven itself seems to have been of two possible forms. In the first, it was surmounted by a

[1] I have to thank Mr. A. B. Searle for much kind advice on the technical points in this section.

dome, in which openings were left to act as chimneys for the creation of the upward draught; in the second, it was built with high vertical walls,[1] and was left more or less open at the top for the same purpose. The domed oven was probably used generally for the small types of round pottery kiln,[2] the dome being constructed of grass, clay plates, earth and other materials; [3] the vertical-walled ovens were probably employed in the larger rectangular tile kilns, and perhaps also in the case of the larger round pottery kilns, and their walls would have been built of tiles.[4] The fire tunnel of the kiln was lengthened to increase the draught, in some cases by extending it in front of the main body of the kiln, in others (as at Holt) by thickening the front wall.

Certain other general features of the updraught type of kiln may be noticed, before proceeding to a study of its variations:

1. The lower part of the kiln was generally erected below ground level, so that the oven floor itself was actually at or near the surface. This method had two advantages. In the first place, the kiln, enclosed in a pit in the ground, was a solid structure more capable of withstanding the stresses set up by the heat generated in firing; secondly, it provided for economy of labour in setting and drawing, owing to the convenient position of the floor.
2. In their construction, the material most generally used was naturally clay. The smaller kilns were built almost entirely of this material. With it were frequently mixed tile or pottery fragments, and in some cases pebbles. Stone was often used for foundations or lining flues; and places liable to much wear (as at the furnace mouth in stoking and shovelling) were generally strengthened with tiles, set in daub. Large kilns were frequently enclosed in a casing of masonry.

Updraught kilns occur in all forms from round through oval to square or rectangular. They are based in all cases,

[1] The exact nature of the superstructures of these kilns is difficult to determine, owing to the fact that they are seldom preserved above the first foot or so of their height.

[2] See, for example, a diagramatic restoration of the firing of one of these small kilns in Heywood Sumner, *New Forest Pottery Sites*, Pl. XVI (reproduced in *B.M. Guide to Roman Britain*, Fig. 129). The kiln there shown, however, is unusual in the use made of an external chimney (see below, p. 56).

[3] As at Horningsea (below, List No. 7).

[4] These remain in part in the case of the Holt kilns. The open tops were probably partly covered with timber to protect the contents of the ovens from the weather, spaces being left to ensure a good draught.

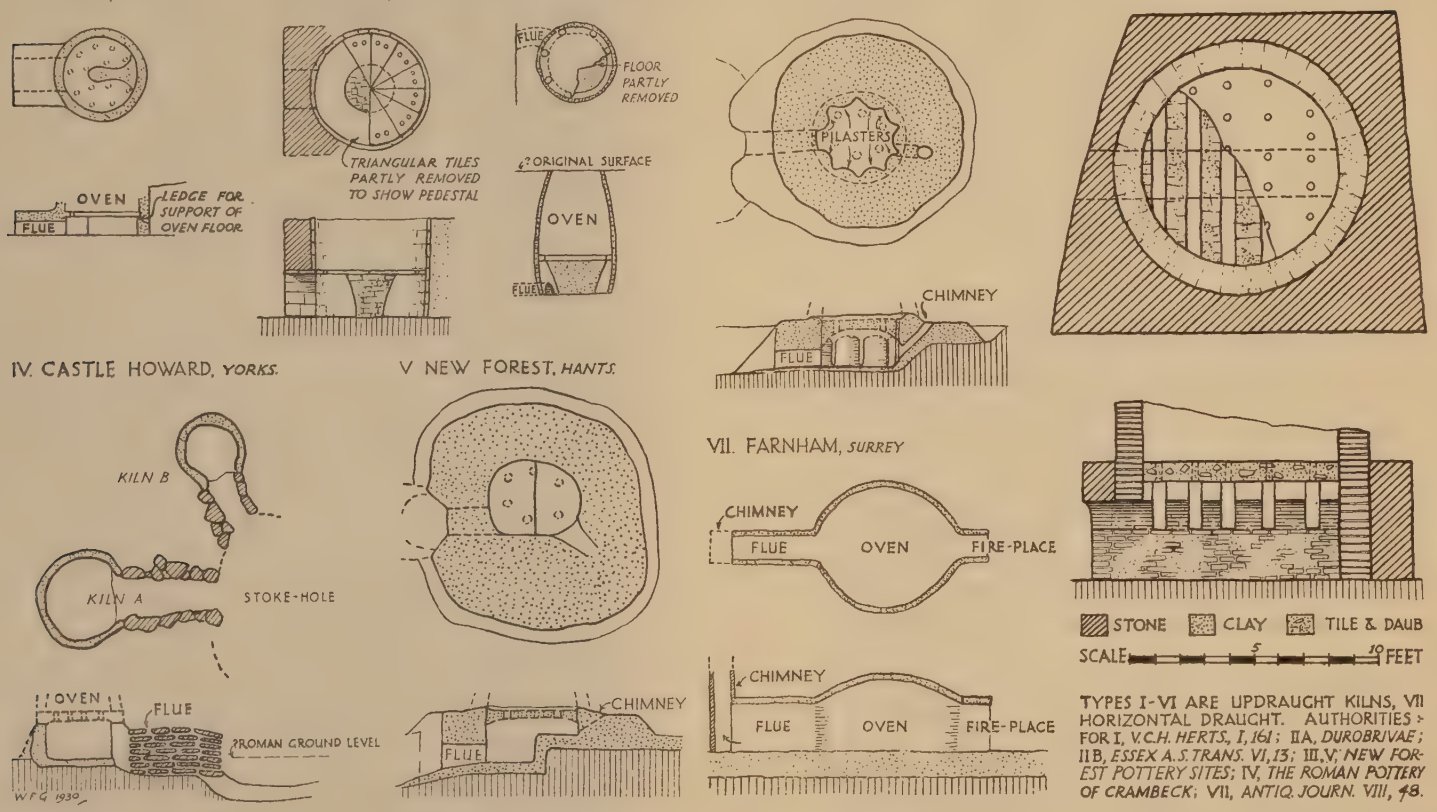



Fig. 31.

*To face p. 55.*

however, on the same general principle, and a basis for their classification can only be found in the type of substructure erected to provide support for the oven floor.

The main condition to be fulfilled was that the substructure had to ensure efficient passage of the heat from the combustion chamber to the oven, as quickly, as regularly, and as evenly as possible.

For this purpose two factors are of importance : the form of the support should be such as to allow of no " dead " spaces, in which baffling of gases, and consequent waste of heat, could be set up. Secondly, it should allow of distribution of the vent-holes in such a way as to provide even distribution of the heat to the oven itself.

Typologically speaking, Roman kiln-types do not appear to show any sequence of development towards the ideal kiln. The different methods of construction are found in use side by side, and apparently in all periods.

1. *Round or oval kilns.*—Round or oval kilns are the commonest forms. In Britain at any rate they seem to have been used only for pottery, and never for tiles, probably because of their small size (see below).

Fig. 31 illustrates the various kinds of structure employed in round or oval kilns :

I. Oven floor supported by a tongue-like column extending from the back wall to the centre of the combustion chamber, in a line with the fire-hole entrance. The type is well represented in British kilns, and is also frequently found at Rheinzabern and other continental sites. In some cases (*e.g.* Sibson, List, no. 35) a ledge on the inner circumference of the kiln was added to carry the floor.

II. Oven floor supported by a circular column or table of slightly varying form. In some cases (*e.g.* London (St. Paul's) New Forest (Sloden), etc.) the column is a simple cylinder, in others (*e.g.* Shoebury), it resembles an inverted truncated cone.

III. No central support, but a series of " pilasters " lining the internal wall of the combustion-chamber to take the floor. The type is found in the New Forest, at Shepton Mallet, Somerset, and also at Horningsea. In view of the evidence of the first two examples there can hardly be any doubt that the pilasters at Horningsea were also intended for the support of a floor of ordinary type, in spite of Walker's statement, that no trace of flooring was observed. Such traces may well have been destroyed by natural agencies and agriculture. As suggested in the case of the Linwood kiln (*New Forest Pottery Sites*, pp. 76–79 and Pl. XXIII) the difficulty of spanning the four or five feet of combustion-chamber with a thin clay floor

pierced with vent-holes may have been overcome by the use of a wooden framework which supported the floor until it had become sufficiently hard to dispense with support.[1] The framework was then consumed by the fire. The kiln figured is exceptional in the use of a chimney to the combustion-chamber, a feature which is found in a number of the New Forest kilns and occasionally elsewhere (*e.g.* at Warrington). As already stated, the normal method of creating an upward draught was by means of an opening left in the oven-dome, which ensured the complete contact of the hot gases with the charge in the kiln. The additional chimney was apparently intended partly to regulate the degree of heat by withdrawing it from the oven as necessary, partly also to create a good draught at the commencement of the firing. Probably, however, the chimney was kept sealed during the actual firing of the pottery, as otherwise a great deal of the heat would have been wasted.

IV. No permanent internal supports to the oven floor, a wooden framework being perhaps used as in type III. The two kilns figured (Castle Howard, No. 100), illustrate the only type of grouping of kilns attempted in this country. At Silchester (No. 26) the same arrangement of two kilns occurs, while at St. Paul's, London (No. 51) four kilns were grouped radially around a common stoke-hole. As already stated (above, p. 32) this arrangement of a number of kilns was advantageous in the economy of effort it allowed in the various operations of firing wares. But while more elaborate plans are found on the Continent (*e.g.* at Heiligenberg [2]) the idea does not seem to have been followed up in this country, perhaps because the needs of the industry did not call for large-scale building.

V. A New Forest type which does not seem to occur elsewhere. The oven floor itself has no permanent supports in the combustion-chamber, but the floor of the latter has a pronounced upward step with a rise of 1 foot towards the chimney. This step may have been intended to force the hot gases upwards, and at the same time to eliminate unnecessary space in the combustion-chamber.

VI. The round kiln with cross-walls appears to be represented in this country only by the round pottery kiln at Holt, which is here included on a common scale for comparison both as to size and structure, with the other types. For description see above, p. 37.

[1] Mr. Searle suggests that loose supports were more likely to be used, which could have been removed for cleaning, etc. But no evidence is at present available to decide this question. [2] Forrer, *Die römischen Terrasigillata-Töpfereien von Heiligenberg*, etc., pp. 36 ff.

It will be observed that the only type of round kiln which adequately fulfils the conditions (p. 55) is that used at Holt.

The other types have three disadvantages :

(i) The support is concentrated in such a way that a large part of the floor has to go unprovided with vent-holes, with the consequent tendency to uneven distribution of heat, and loss of pottery owing to imperfect firing.[1]

(ii) The size of the support sets a limit to the size of the kiln : the larger the kiln, the larger must be the support, and the larger the area tending to be wasted for lack of vent-holes. The same difficulty still occurs in type III, although in this type the permanent supports were eliminated, and replaced by a temporary or loose support of some kind (see footnote, p. 56). This arrangement allowed for distribution of the vent-holes, but a floor of any size would have collapsed under its own weight and that of its charge as soon as the temporary supports had been burnt away.

(iii) Waste spaces in the combustion-chamber hinder the efficient conduct of the heat to the oven by setting up baffling. The chimneys in the New Forest kilns probably represent an attempt to overcome this difficulty by creating a direct draught at the commencement of each firing.

The superiority of the Holt type is at once apparent. By the system of cross-walls the supports were so distributed as to allow even placing of the vent-holes, whatever the size of the kiln, and the design of the flues facilitated quick and efficient conduct of heat to the oven. The effect of the design on the sizes of the kilns is shown in the figure. The Holt kiln, with an internal diameter of 8 feet, is twice the size of most of the others, which vary between 3 feet and 5 feet. This disparity is not to be explained entirely by the larger-scale construction of the Holt works ; it occurs also on the Continent, in kilns embodying the various features, on the same site, and used for the same purpose.[2]

[1] The extreme size of the support in the Shoebury kiln (No. 20) is a good example of the way in which the support limits the area available for vent-holes. Here the heavy conical table makes possible only a single set of vent-holes around the edge of the oven floor. In some kilns (*e.g.* at Castor and Sibson, Nos. 62 and 35) pierced tiles made to a pre-determined size were used to span the combustion-chamber from wall to support. This device enabled the support to be cut down by strengthening the floor, but the size of the kiln was still limited according to the largest size of tile which could be produced under the conditions.

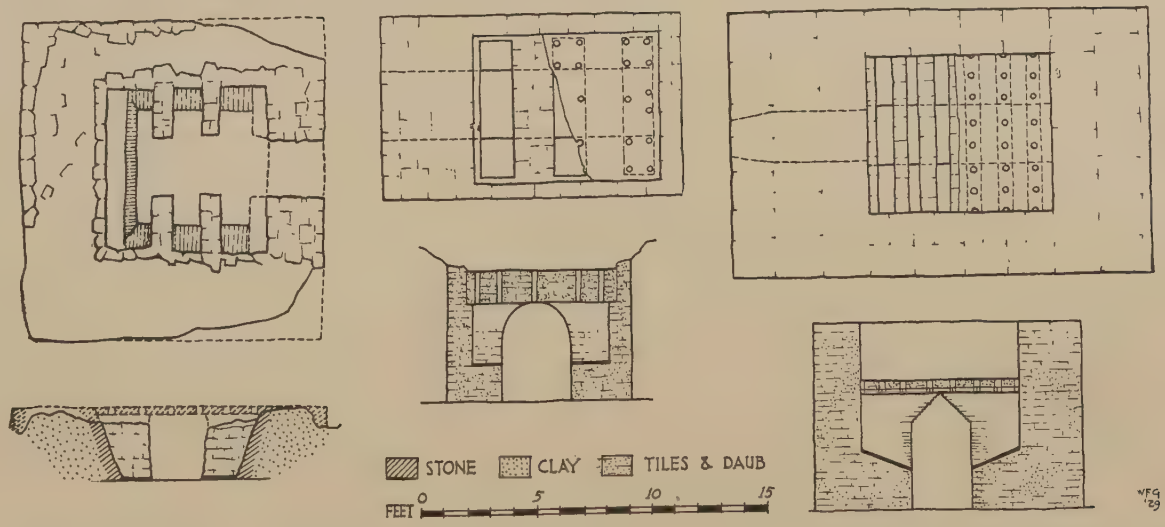
[2] Thus of a group of kilns at Rheinzabern (Ludowici, ii, Site VII, pp. 159–64 and Figs. 44–6) a round kiln with cross-wall supports has a diameter of 2.15 m., while the other round kilns in no case have a diameter of more than 1.3 m.

TYPES OF ROMANO-BRITISH RECTANGULAR TILE & POTTERY KILNS *(PLANS & CROSS-SECTIONS)*

TYPE I : MUMRILLS, STIRLINGSHIRE

TYPE II : COLCHESTER, ESSEX

TYPE III : HOLT, DENBIGHSHIRE




AUTHORITIES USED : FOR I. MACDONALD IN *PROC. SOC. ANTIQ. SCOT. XLIX* ; FOR II, JOSLIN IN *ESSEX ARCH. SOC. TRANS. I (1878)*

NOTE : THE BOTTOMS OF THE CROSS-FLUES, WHICH FORM THE BASIS OF THE CLASSIFICATION, ARE SHOWN THICK IN SECTIONS

Fig. 32.

The round up-draught kiln went a step further in Roman times after the Holt type, in the muffle-kiln which is found in a number of continental potteries for the manufacture of Samian ware.[1] In these kilns the heat and gases were conducted through the oven by means of jointed pipes, thus obviating any danger of the wares being harmed through direct contact with the flames, etc. This type, however, does not appear to have been common, and is not yet recorded in this country.

2. *Rectangular kilns.*—Comparatively few kilns of the rectangular type have been recorded in this country. Where they occur the method of construction is identical with that employed in the Holt kilns, *i.e.* the floor of the oven is supported by a series of cross-walls which are carried on arches over the main flues, and divide the combustion-chamber into a number of cross-flues by means of which heat is distributed to the vent-holes throughout the kiln.[2]

Rectangular kilns were used (as at Gelligaer and Holt) both for tiles and pottery. In the materials used for their construction they resemble the round kilns, except that large tiles, and particularly roofers, are more commonly used for the walls and body of the kiln. The lower part of the kiln, as in the round kilns, was constructed below ground level, the whole kiln frequently being enclosed in a masonry casing.

The variations in the type consist in the form of the cross-flue bottoms, as illustrated in Fig. 32 :

I. Horizontal flue bottoms on a level with the bottom of the main flue. The only example of the type recorded in this country.[3] The restored section of this kiln shows a flat-topped main flue ; but the flue may actually have had the more normal construction of a built arch.

II. Horizontal flue bottoms above the level of the main flue.

III. Upward sloping flue bottoms.

The above series may be regarded as representative of all the varieties of the updraught kiln as yet recorded in Britain. The main features throughout are the same, and any variations

[1] As at Heiligenberg (Forrer, *op. cit.*, p. 74) ; Cannstatt (figured in *Germania Romana*, ii, Pl. XXXIV, 1) ; Eschweilerhof (Knorr and Sprater, *Die westpfalzischen Sigillata Töpfereien von Blickweiler*, etc., pp. 112 ff. and Figs. 37–40).

[2] Other types of structure are found in the rectangular kilns on the Continent, particularly the tongue-pedestal type (*e.g.* the group at Heddernheim : Fölzer, Die Bilderschüsseln der ostgallischen Sigillata-manufakturen, Pl. xxxiii).

[3] It occurs on the Continent at Rheinzabern, Ludowici, I, p. 151 f. and Fig. 8.

are mostly of small importance. Where necessary these variations are referred to in the list below.

### B. *Horizontal draught kilns.*

The horizontal draught type of kiln consists of a simple chamber, with a furnace at one end, and a flue at the other. The pottery to be fired is set in the chamber, and the draught draws the heat horizontally through the pottery.

The type is represented particularly by a group at Farnham, Surrey (below, No. 84). These kilns are of small size, and were used for the firing of pottery (Fig. 31, vii).[1] The oval or circular oven is domed, and built of clay. The flues and fireplace are triangular in section, the latter being roofed with a rectangular tile. The chimney in the example figured was built of slabs of ironstone.

### C. *Clamps.*

The method of firing tiles in "clamps", dispenses with a permanent kiln structure. The method of clamp-firing is extensively followed where the erection of a permanent kiln is impracticable or uneconomic. Several examples of what were apparently clamps for the firing of Roman bricks and tiles are recorded (*e.g.* at Colchester, No. 18 and Melton, No. 81); but their structure is not described in detail. For the modern method of clamp-firing, see Searle, *An Encyclopædia of the Ceramic Industries*, i, pp. 211–13.

[1] In the diagram the plan is reconstructed from the description and measurements given by Major A. G. Wade in *Antiq. Journ.*, viii, pp. 48 ff. The description given is based on these kilns, which are the only well-preserved examples of the type recorded.

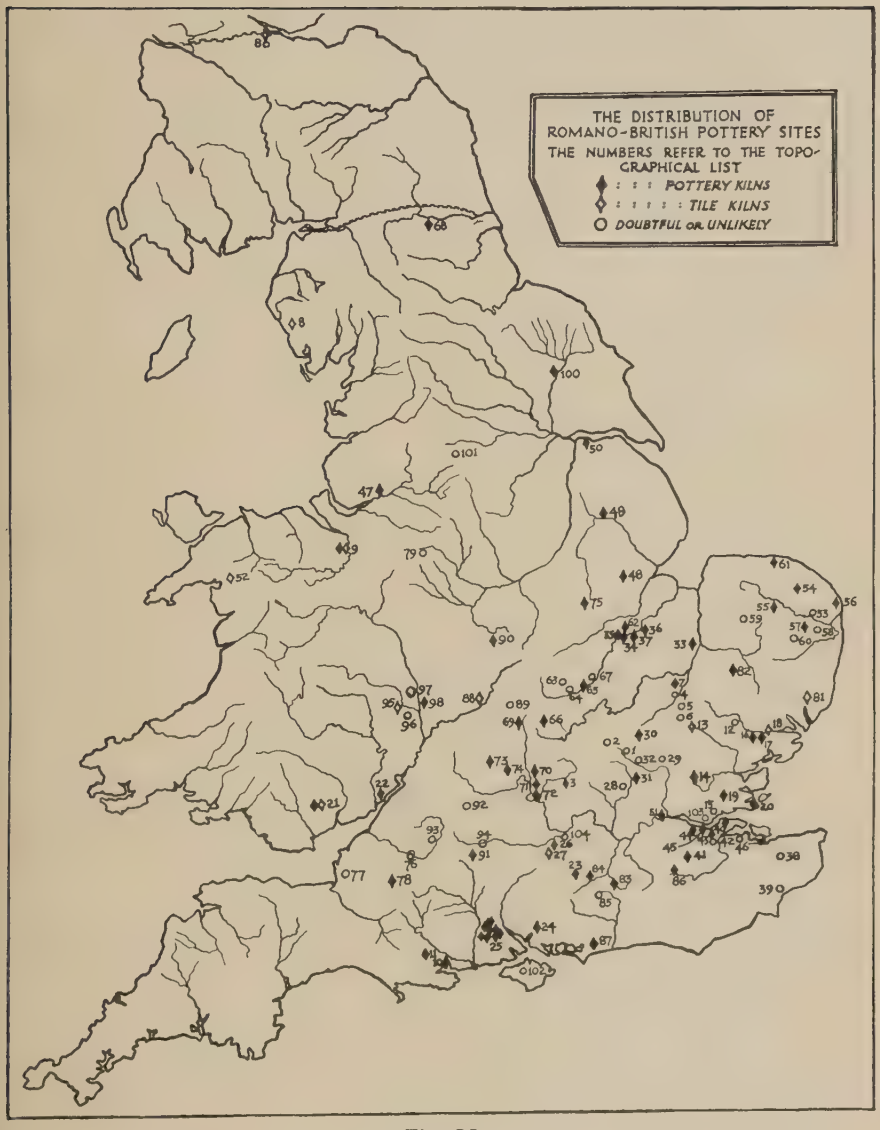



Fig. 33.

*Addenda:* 105. Tyneham, Dorset; 106. Nr. Salthouse, Norfolk; 107. Nr. Two Mile Bottom, Norfolk; 108. Nr. Market Weighton, E. Yorks.

## 2.—A Topographical List of Romano-British Pottery Sites.

The list is arranged alphabetically, according to counties. As already stated, its main purpose is the elucidation of the structural features of each site on the evidence available. Although a number of uncertain sites is included, together with some on which the kilns have not been excavated, no attempt is made to incorporate evidence for potteries and tileries which have not yet been located. Thus the evidence of tile-stamps clearly indicates the existence of an extensive industry in the Cotswold area around Cirencester,[1] but the kilns have not yet been found; while waster-tiles used as flooring in the villa at Ely, near Cardiff,[2] are also evidence for a kiln site in the immediate neighbourhood which is still at present unknown. No attempt is made at general classification of the industries, as part of a wider scheme lying outside the scope of the present work.

In the preparation of the list I have to thank: Miss M. V. Taylor for the verification of references, and Messrs. Christopher Hawkes, M. R. Hull, R. F. Jessup, P. G. Laver, B. W. Pearce, R. U. Potts, E. J. Rudsdale, and Heywood Sumner for information relating to individual sites.[3]

The distribution of the sites is shown on the accompanying map, Fig. 33, the numbers on which refer to those in the List.

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes |
|---|---|---|---|---|---|---|
| 1 | Beds. | Leagrave Marsh (Wallud's Bank), 1884. | "Clay bars", baked clay fragments with straw impressions, potsherds, etc., suggesting a pottery kiln. | | *Proc. Soc. Antiq.* 2 S, x, 133. *V.C.H. Beds.*, i, 8. | Also thought to be the site of a cremation. |

[1] Haverfield in *Archæologia*, 69, p. 197. [2] Wheeler, *Cardiff Nat. Soc. Trans.*, lv, 24 and Fig. 5.

[3] To these should be added the name of Mr. O. G. S. Crawford.

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 2 | Beds. | Toddington (Fox Burrow), 1874. | Coarse, hand-made, partly baked pottery, wood ash, etc., thought to be site of kiln. | | *Proc. Soc. Antiq.*, 2S, vi, 184. | Doubtful. Other Roman finds have been made in the area at different times. |
| 3 | Bucks. | Stone, 1871. | A kiln "also apparently Roman" near wells containing pottery, etc. | | *R.C.H.M. Bucks.*, i, 290. | |
| 4 | Cambs. | Cambridge (Jesus Lane). | No kilns recorded, but many globular-necked flasks and bottles, mostly showing defects as though wasters from kilns nearby. | The pottery is of late first-century type. | Fox, *Arch. Cambridge Reg.*, 211. *Cambridge Ant. Soc. Proc.*, x, 194 (for pottery). | The pottery shows native influences, but is nowhere common. |
| 5 | Cambs. | Fulbourn, 1875. | Several circular kilns, one 13 feet deep with shelf round lower part, containing Roman pottery and much burnt chalk. | | Fox, *Arch. Cambridge Reg.*, 211. *Cambridge Ant. Soc. Proc.*, x, 177–8 (figured). | Roman burials also found. Original purpose of kilns uncertain. For some time at any rate they had been used as lime kilns. |
| 6 | Cambs. | Great Chesterford, 1879. | Kiln closely resembling those at Fulbourn, No. 5 above. Circular, diam. 12 feet at top, depth 15 feet, with ledge 5 feet from bottom. Walled entrance, with circular window or flue in kiln wall directly facing. Filling contained Roman pottery. | | Fox, *Arch. Cambridge Reg.*, 211. *Cambridge Ant. Soc. Proc.*, x, 178–82 (figured.) | Original purpose not known. The inside had been completely cleared of all traces of its former use before conversion into rubbish pit in Roman times. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 7 | Cambs. | Horningsea. | Seven pottery kilns, with pilaster supports, type III, ranged in two lines.[1] Diams. 3–7 feet. Clay plates, straw, etc., used in building up oven-domes. Grey-ware pottery of various types. | Pottery, including Samian, and other finds dated first–end of third centuries A.D. | *Cambridge Ant. Soc. Proc.*, xvii, 14–70. Fox, *Arch. Cambridge Reg.*, 211. | Some pottery definitely Late Keltic, while some shows Late Keltic influences. Perhaps a native site where work was continued well into the Roman period. Pottery mostly of local distribution. |
| 8 | Cumberland | Muncaster Castle. | Tile-kiln. 3–4 feet high with semicircular front 4 feet in radius. "Apertures of two flues" and part of main flue arch remaining. Apparently of cross-wall type. Roofing and floor-tiles with markings similar to those found at Walls Castle.[2] | | *Cumb. & West. A.S. Trans.*, viii, 67. *Arch.*, liii, 512. | A pottery and tile-works for supply of auxiliary forts at Hardknott and Ravenglass. |
| 9 | Denb. | Holt. | Pottery and tile works of the Twentieth Legion. 8 rectangular and 1 round kiln in various sizes, all of cross-wall type. | | Present report. | |

[1] The absence of definite traces of floors in these kilns led Walker to explain them as having been used as smother kilns, the pilasters being intended to strengthen the kiln sides. But see p. 55, above.

[2] The site has recently been re-excavated. There were at least two kilns built partly of tiles, and partly of stone, and used both for tiles and pottery. Oven floors supported on square pillars like hypocaust. The second kiln had a permanent superstructure with a roof supported on pillars. No dimensions given (R. G. Collingwood, *Roman Eskdale*, 17–19). The hypocaust method of support on a number of pillars seems to have been used occasionally (*see* No. 82), but there are no published plans.

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 10 | Dorset | Hamworthy, 1926. | Small kiln or oven, bowl-shaped, with much pottery, crude clay, etc.[1] | Pottery of Late Keltic and Roman type. Coin of Claudius. | *J.R.S.*, 1926, 232, and information from Mr. Heywood Sumner. | Apparently two occupation levels, the upper, Roman, at a depth of 2 feet 6 inches, the lower pre-Roman, at a depth of 5 feet 6 inches. The latter could not be adequately excavated owing to its waterlogged condition and Mr. Sumner does not regard the Late Keltic date of the oven as proved. |
| 11 | Dorset | Milton Abbas (Bagber Farm), 1841. | Potter's kiln. Disc of Kimmeridge shale (? potter's wheel). Kiln not described. | | Warne, *Dorsetshire, its Vestiges*, etc., 14. *Arch. Review*, iv, 296. Dorset County Museum (for disc). | |
| 12 | Essex | Alphamstone. | Possibly remains of tile or pottery kiln : flue 11 feet long of unfired bricks, with remains of superstructure. | | *J.R.S.*, 1928, 203, and information from Messrs. M. R. Hull and E. J. Rudsdale. | Probably connected with Roman villa nearby, but its purpose is not known, and its date uncertain. |

[1] The excavator, Mr. H. P. Smith, of Poole, was of opinion that the oven was " the kind of oven that could be used for all sorts of purposes ".

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 13 | Essex. | Ashdon (Oakfield), 1852. | Tile kiln 18 feet square. Cross flue walls with upward-sloping flue-bottoms, as Holt. Flanged tiles largely used in walls with clay floor. | | *Arch. Journ.*, x, 21 (figured). | |
| 14 | Essex. | Buttsbury (Union), *c.* 1860. | Pottery kiln 2½ feet diam. with square flue. Much pottery, but internal structure not described. Roman burials, etc., found nearby *c.* 1863. | | *R.C.H.M. Essex*, iv, 20 (for other references). | |
| 15 | Essex | Chadwell, 1922. | Domed oven 5 feet diam., with prolonged flue. Large quantities of pottery found, but nothing to prove that the oven was actually for pottery making. | Pottery of 3rd–4th century date. | *R.C.H.M. Essex*, iv, p. 24 (figured, Pl XXXVI). | |
| 16 | Essex | Colchester (S. of Lexden Road). | Pottery kilns, not described in detail. The description of "vases standing on circular vents above the hollow chambers through which the heat was conveyed to them" indicates updraught kilns. | | C. R. Smith, *Coll. Ant.*, ii. *R.C.H.M. Essex*, iii, 29. | |
| 17 | Essex. | Colchester (N. of Lexden Road), 1877. | Group of five kilns: (1) rectangular, cross-walls with horizontal-bottomed flues; (2) round-oval, type I; (3) round, type II; (4), (5) round, either with double flues, or horizontal-draught, type VII. Dimensions: (1) 8 by 6½ feet; (2)–(5) from 4 to 5 feet. All for pottery. | | *Essex Arch. Soc. Trans.*, N.S., i, 192 (figured). *Brit. Arch. Assoc. Journ.*, xxxiii, 230 and 267. *R.C.H.M. Essex*, iii, 29. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 18 | Essex. | Colchester (North of town), 1907. | A 3 foot layer of burnt earth mixed with brick, probably a brick clamp. A pottery also said to have been found nearby "some years before". | | *Essex Arch. Soc. Trans.*, x, 325. *R.C.H.M. Essex*, iii, 32. | |
| 19 | Essex. | Great Bursted. | A number of pottery kilns found at various times : | | | |
| | | | (i) In 1724, 1 mile north of parish church. Kiln "large enough to hold 6 half-peck loaves". | (i) "Coins of Trajan, Hadrian and others. | (i)–(iii) *R.C.H.M. Essex*, iv, 53. | |
| | | | (ii) Mid nineteenth century. "Remains of an oven," potsherds, etc. Perhaps also a second kiln nearby. | (ii) Coins of Trajan, Hadrian, Pius and Constantine, and a British gold coin, found with burials nearby. | | |
| | | | (iii) Norsey Wood. Trenches, with smelting furnace and number of kilns, one 3–4 feet diam., and built of square bricks. Some of the trenches were clearly dug to get clay. | (iii) Burial-urns in some cases of Late Keltic type. Also much Roman material. | (iii) *Essex Arch. Soc. Trans.*, O.S., v, 212. | (iii) A native occupation-site occupation of which was carried on into the Roman period. |
| 20 | Essex. | South Shoebury. | (i) 1892. Pottery kiln 4–5 feet diam., domed oven. Central pedestal, type II. Later used for burials. | The Late Keltic type pottery found in the oven was apparently not strictly contemporary. | (i) *Essex Arch. Soc. Trans.*, N.S., iv, 202. | |
| | | | (ii) 1895. 500 yards South of (i). Inverted cone pedestal, type IIB, with extended flue and 8 vent-holes at circumference. Diam. 3 feet. Other kilns said to have been found nearby. | | (ii) *Essex Arch. Soc. Trans.*, N.S., vi, 13 (figured). *Proc. Soc. Antiq.*, xvi, 40. *R.C.H.M. Essex*, iv, 143. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 21 | Glamorgan. | Gelligaer 1913. | Kiln for tiles and pottery, 8 feet square, of Holt type, outside annexe to Roman fort. | Contemporary with fort, which was occupied *c.* 75–110 A.D. | Ward, *Cardiff Nat. Soc. Trans.* xlvi, 1. | |
| 22 | Glos. | Tidenham (Sedbury Park). | "Vestiges of kiln and numerous remains of vases of various forms" said to be remains of Roman pottery works. Kiln not described or figured. | | Ormerod, *Arch. Journ.*, xiv, 276; xvii, 189 (map); also *Strigulensia* (1861), 43-8. | |
| 23 | Hants. | Alice Holt Forest, 1838, etc. | Extensive remains of pottery, but no actual kilns excavated or described, noticed at various times along edge of forest, near Farnham–Petersfield road. | | *Arch.*, xxviii, 453. *Proc. Soc. Antiq.*, xv, 78. *V.C.H. Hants.*, i, 306. | |
| 24 | Hants. | Hallcourt Wood, 1889. | Kiln, diam. 7 feet 9 inches, and pottery fragments. No further details. | | *Arch. Review*, iv, 69. *V.C.H. Hants*, i, 345. | |
| 25 | Hants. | New Forest Group. | Before Heywood Sumner no complete kiln recorded. Traces of pottery noticed at: *Crock Hill, Islands Thorns, Anderwood, Sloden, Pitts Enclosure, Oakley Enclosure, Lower Hat, Ashley Rails, Nr. Lynwood.* | | *Arch. Journ.*, xxx, 319. *Arch.* xxxv. | At *Pitts Enclosure* 5 kilns were found ranged in a semicircle, but in very ruined state (*Arch. Journ.*, xxx, 323). |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| | | | Kilns excavated by Heywood Sumner :<br>*Ashley Rails*, 3, all ruined ;<br>*Old Sloden*, 1, central pedestal, type II ;<br>*Sloden Enclosure*, 3, platform, type V ;<br>*Lower Sloden Enclosure*, 1, no support, type IV ;<br>*Black Heath Meadow, E.*, 1, pilaster supports, type III ;<br>*Black Heath Meadow. S.*, 1, rudimentary tongue-pillar, type I ;<br>*Rough Piece, Linwood*, 1, no supports, type IV ;<br>*Islands Thorns*, potter's hut and remains of kiln.<br>Kilns all show very similar features : use of chimney to combustion-chamber, clay for body of kiln, with stone foundations, etc. *See* above, p. 54. In size they range from $1\frac{5}{8}$ to $3\frac{1}{2}$ feet diams. | No stratification in pottery. 13 coins, of which 3 are 2nd century, the remainder being *post* 250 A.D., suggesting 3rd to 4th centuries as general date of industry. The pottery types show that all the kilns were probably not in use at the same time. | Heywood Sumner. *Excavations in New Forest Pottery Sites, passim.* | No evidence found to link up pre-Roman and Roman industries, although wares show native influences. The prosperity of these potteries probably coincided with that of the S. British villas, which reached its height *c.* 250–350 A.D. Pottery distribution not entirely local : it is found on most late sites in South Britain.<br>Life of individual kilns governed here as at Crambeck (No. 100) and in the Nene Valley by the local supplies of clay and fuel (see above, p. 41, and Nos. 34, 62, etc., below). |
| 26 | Hants. | Silchester 1909. | Two pottery kilns on north-east side of city. Tongue-pedestal, type I, diams. 3 feet 6 inches and 2 feet 10 inches. Grouped as at Crambeck (No. 100 below). | The pottery includes types belonging to the 1st and early 2nd centuries. | *Arch.*, lxii, 327 f. May, *Silchester Pottery*, 192 ff. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 27 | Hants. | Silchester (Little London) | Site of tilery, but no kilns found. Numerous fragments of tiles including "wasters". Stamp NER. CL. CAE. AVG. GR as at Silchester. Clay-pit (?) and raised bank (? road from tilery to Silchester) recognized. | | *Antiq. Journ.*, vi, 75. | |
| 28 | Herts. | Aldenham (Boyden's Hill), 1878. | Large quantities of broken Roman tiles and pottery, at depth of 4–5 feet thought to indicate site of pottery. | | *V.C.H. Herts.*, i, 148. | |
| 29 | Herts. | Amwell, 1900. | Extensive remains of urns, amphorae, etc., together with some of the moulds used. Thought to be site of pottery kiln. | | *V.C.H. Herts.*, i, 148. | Exact locality in parish not known. |
| 30 | Herts. | Hitchin (Hitchin Hill). | Roman kiln said to have been discovered in old brick field. | | *V.C.H. Herts.*, i, 157. | |
| 31 | Herts. | Radlett (Loom Lane), 1898. | Two pottery kilns: (i) round, diam. 3 ft., tongue pedestal, type I; (ii) round oval, length 6 feet, central pedestal, type II. Extended fireholes in each case. | | *Proc. Soc. Antiq.*, xvii, 261. *V.C.H. Herts.*, i, 161 (figured). | The forms made included amphorae, urns, etc., and especially mortaria. The stamps CASTVS, CASTVS FECIT, etc., probably indicate a local potter. |
| 32 | Herts. | Welwyn (The Grange), 1908. | Roman tiles, a large quantity of flints, mortar, etc., all showing signs of excessive heat, and thought to be a pottery kiln. | | *V.C.H. Herts.*, i, 168. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 33 | Hunts. | Bluntisham-cum-Earith. | Possibly remains of two pottery kilns found with traces of small village on edge of fens. | Site occupied by fen-dwellers about 2nd century A.D. | *Reliquary*, xx, 245. *V.C.H. Hunts.*, i, 247. | If authentic, these kilns were entirely for local supply. |
| 34 | Hunts. | Chesterton and Water Newton, *c.* 1828, etc. | Kilns found near "the Castles" by Artis, totalling altogether at least 14, with workshops, etc. Apparently not all of the same period, and one at least thought to be pre-Roman. Kilns generally of two types, central or tongue pedestal, types I and II. | Potteries established here apparently shortly after the settlement at the Castles (late 1st cent.) continuing until end of period. Most prosperous time during 3rd–4th centuries. | *Gent's Mag.*, ii, 355. *Journ. Brit. Arch. Assoc.*, ii, 166. *V.C.H. Hunts.*, i, 230. | One of the chief centres of the Nene Valley group the most important British source for the so-called Castor ware.[1] See also no. 62 below. |
| 35 | Hunts. | Sibson, *c.* 1820, etc. | Kilns and other remains found by Artis. One illustrated of tongue-pedestal type, type I. A "smother-kiln" also found.[2] | | *Journ. Brit. Arch. Assoc.*, ii, 164 (figured). *V.C.H. Hunts.*, i, 228. | Part of Nene Valley industry. Exact sites of finds not known. |

[1] The best accounts of the Nene Valley potteries are those given by Haverfield in *V.C.H. Northants.*, i, 166 ff., and by Miss M. V. Taylor in *V.C.H. Hunts.*, i, 225–48. Although many chance finds have been made, very little in the way of systematic examination of the Nene Valley sites has been undertaken since the time of Artis, whose own excavations are only incompletely recorded. A number of details remain to be worked out—including the relation between ware produced in the Nene Valley potteries and ware of Castor type of Continental manufacture. The comparatively short-lived occupation of many of the settlement-sites connected with the industry (noted in *V.C.H. Hunts*, I, p. 252) is probably to be explained in the light of the factors governing the life of the industry itself. For these factors, see p. 41, and Nos. 25 and 100.

[2] This "smother kiln" is not described in detail, and it is not known how, if at all, it differed from the usual types.

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 36 | Hunts. | Stanground (Fletton), 1902, etc. | Pottery-waste found 1902–6, kiln 1908. Also "pottery-stands", etc., remains of wharf, and road near kiln. | Site occupied throughout Roman period from mid 1st century. | *V.C.H. Hunts.*, i, 251. | |
| 37 | Hunts. | Stibbington, *c.* 1828. | Kilns and other buildings found near School House. | | Artis, *Durobrivae*, Pl. I. *V.C.H. Hunts.*, i. 226. | Part of Nene Valley industry. |
| 38 | Kent. | Canterbury, St. Augustines, 1929. | Two kilns, one 10 feet diam., second 3 feet 6 inches diam., thought to have been used for lime and metal-smelting respectively, and not for pottery. | | Information from Rev. R. U. Potts. | |
| 39 | Kent. | Dymchurch. | Site of pottery marked on an archaeological survey map of Kent dated 1889. | | Information from Mr. R. F. Jessup, Gravesend. | Doubtful. Mr. Jessup has not been able to trace any references to this kiln. |
| 40 | Kent. | Higham (Hoo Junction), 1926. | Remains of kiln. Two hearths, much "waster" pottery, clay bars, etc. Probably used as rubbish-pit finally. | One pot found apparently 2nd century; remainder dispersed. | Information as above, No. 39. | |
| 41 | Kent. | Otford, 1928. | Pottery-kiln in connexion with Roman villa. Oval, length 6.7 feet. Pilaster supports, as type III, along long sides, built of ironstone slabs and mortar. Oven-floor missing. | Pottery (mostly red ware jugs) of 1st-century type. The kiln was apparently abandoned *c.* 100 A.D. (Coin series of villa, 37–353 A.D.). | B. W. Pearce, Report of Excavation Committee, Sevenoaks Society, on The Roman Site at Otford, 31.12.28. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 42 | Kent. | Shorne. | A kind of "kiln or cowl" of circular form, made of coarse clay, with "small pieces of pottery packed inside", ? for pottery making. | | *B.M. Guide to Roman Britain* (1922), 113. | |
| 43 | Kent. | Springhead, 1921–2. | Pottery-kiln containing typical examples of Upchurch pottery. Diam. 3 feet 8 inches, walls clay-lined and remaining to a height of 13 inches. ? No support, type IV. | | *Antiq. Journ.* viii, 339. And information from Mr. Jessup. | The kiln was unfortunately largely destroyed before its character was realized. |
| 44 | Kent. | Stonewood. | Ruined kiln afterwards used as a rubbish heap. | | Published privately, but no details now known. Information from Mr. Jessup. | |
| 45 | Kent. | Swanscombe (Galley Hill), 1904. | Pottery kiln. Diam. 3 feet 6 inches, clay lined. No sign of internal structure. ? No support, type IV. Fragments of Roman pottery found at same level nearby. | | *Arch. Cantiana*, XXVII, lxxiii (photograph). | |
| 46 | Kent. | Upchurch. | No kilns recorded. Much pottery, including some "wasters" and "kiln-bars", found generally in and about the creeks and marshes of the River Medway. | | See Walters, *History of Ancient Pottery*, ii, 546, note 3, for references. | District regarded as a centre for so-called "Upchurch Ware". No kilns recorded but pottery finds include "wasters". The remains are also explained in part at least as imported pottery lost in landing. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 47 | Lancs. | Warrington (Stockton Heath), 1900. | Three pottery-kilns. (i) With ? drying-oven attached. Diam. as remaining *c.* 3 feet. Oven-floor supported on two pillars, probably variant of type I. (ii) and (iii) diams. *c.* 5 feet central pedestal, type II, but (iii) much ruined. Eight vent-holes in floor, increasing in size according to distance from flue, to distribute heat evenly. | | T. May, *Warrington's Roman Remains*, 55–8 ((i) figured). | Potters' names on types similar to those from the kilns have been found at Warrington: ANIACO, KOTASI, BRICOS, BRVCI (*op. cit.*, 60). |
| 48 | Lincs. | Ancaster, 1865. | Oval pottery kiln beside Ermine Street, near Roman settlement. Length 5 feet at bottom. Floored and lined with stone. Apparently no internal structure. | Pottery and coins of 4th–5th century date found near. | *Arch. Journ.*, xxvii, 11 f. | |
| 49 | Lincs. | Boultham. | Pottery from the site of kilns. (Kilns not described.) | | *Proc. Soc. Antiq.* 2S., III, 439, f. | |
| 50 | Lincs. | Winterton. | Round pottery kiln, diam. *c.* 3 feet (oven-floor). Central cone pedestal, type IIb. Built of clay and pebbles. | | *Proc. Soc. Antiq.*, 2 S.; iv, 190. *Reliquary*, ix, 145 (figured). *Arch. Review*, iii, 184. | The combustion chamber was bridged with potsherds from pedestal to wall to form oven-floor. Used for grey ware. |
| 51 | London. | London (St. Paul's Churchyard), 1672. | Four domed pottery kilns, arranged on a cruciform plan. All central pedestal, type IIa, made of clay and sherds. Dimensions of one kiln: ht. 5 feet, diam. 5 feet. | Some of the pottery apparently of 1st century type. | See *R.C.H.M. Roman London*, 140. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 52 | Merioneth. | Trawsfynydd (Pen-y-stryd). | Indications of at least three tile kilns, with large quantities of "wasters". Near Roman road to fort at Tomen-y-mur. Not excavated. | | *Arch. Camb.*, 1924, 202. *Antiq. Journ.* iv, 276 | Hard blue ware like that of tiles from bath-building at Tomen-y-mur and also at Caer Gai. Apparently a tilery for the supply of local auxiliary forts. |
| 53 | Norfolk. | Brundall. | Finds of washed clay, unburnt bricks, waster pottery, etc., as well as other pottery, suggestive of pottery-works. | | *Arch. Journ.*, xlvi, 354. | |
| 54 | Norfolk. | Buxton (Oxnead Park), 1667. | Pottery kiln. | | Sir T. Browne, *Posthumous Works*, 2–15. *Arch. Journ.*, xlvi, 355. | |
| 55 | Norfolk. | Caister-by-Norwich, 1822. | Pottery kiln, oval, *c.* 6 feet by 4½ feet. Lined with blue clay with partitions of same material. ? type. | | *Arch.*, xxii, 412 (figured). *V.C.H. Norfolk*, i, 291. | |
| 56 | Norfolk. | Caister-by-Yarmouth, 1851. | Pottery kiln, *c.* 4 feet across, built of clay. Two ledges supporting pottery. Iron stand and "wasters". Type uncertain. | | *Brit. Arch. Assoc. Journ.*, xxxvi, 90, 206. *Norfolk Arch.*, iv, 352. | The accounts of this kiln are incomplete and lack precision. |
| 57 | Norfolk | Hedenham. 1858. | Round pottery kiln. Diam. 5 feet (oven-floor). Floor (missing) supported on shelf 13 inches wide 4 feet from furnace floor. Probably no central support, type IV. Clay steps on each side of entrance. | | *Arch. Journ.*, xviii, 374. *Norfolk Arch.*, vi, 149 (sketch but no plan). *V.C.H. Norfolk*, i, 318. | No pottery was actually found in kiln, but Roman finds near. May have been later used for burning lime. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 58 | Norfolk. | Kirby Cane (Pewter Hill). | "A kind of oven or kiln of Roman tiles." Destroyed before it could be examined. | | *Norfolk Arch.*, iv, 313. *V.C.H. Norfolk*, i, 318. | Roman pottery and other finds near. |
| 59 | Norfolk. | Saham Tony, 1864. | Roman "flue". Thought by G. E. Fox, from private information, to be a kiln. | | *Norfolk Arch.*, vii, 349. *Arch. Journ.*, xlvi, 331–49. *V.C.H. Norfolk*, i, 320. | |
| 60 | Norfolk. | Stratton, 1773. | "Sepulchral hearth," possibly a kiln, urns, coins, and other remains. | | *V.C.H. Norfolk*, i, 321. | Doubtful. |
| 61 | Norfolk. | Weybourne, 1857. | Pottery kiln. Diam. 4–5 feet. Central pedestal support, type II. Oven-floor missing, but clay pads and wrappers for dome found. Kiln built of clay and potsherds. | | *Norfolk Arch.*, v, 254 (figured). *V.C.H. Norfolk*, i, 322. | Used for firing plain grey ware. |
| 62 | Northants. | Castor. | One of the chief centres of the Nene Valley group. Many kilns excavated, but only one type described in detail, with central pedestal, type II. Specially formed bricks used in construction of kilns. Many other buildings and an unusual type of cauldron said to have been used for slips, etc. | See above, No. 34. | See generally Haverfield's account, *V.C.H. Northants.*, i, 166 ff., and refs. above under Nos. 34 etc. | See above, No. 34. |
| 63 | Northants. | Dallington, 1862. | Trench full of potsherds, ? a crudely built pottery kiln. | | *Arch.*, xliii, 119. *V.C.H. Northants.*, i, 217. | Very doubtful. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 64 | Northants. | Hardingstone (Hunsbury Hill), 1875. | "Handbricks", potsherds and perhaps a rude kiln. | 3 AE of Claudius II, Gothicus (269–70 A.D.) | *V.C.H. Northants.*, i, 217. | Doubtful. |
| 65 | Northants. | Mears Ashby, 1899. | Kiln with "wasters" of grey ware. | | *V.C.H. Northants*, i, 218. | The pottery is in Northampton Museum. |
| 66 | Northants. | Wappenham (Home Field), 1874. | Rough kiln containing 20 broken urns and charcoal, and other remains. | | *V.C.H. Northants.*, i, 221. | |
| 67 | Northants. | Wellingborough, *c.* 1877. | Roman potter's wheel, stands of unbaked clay for supporting pottery in kiln, and other finds from "near Wellingborough". No kilns recorded. | | *Arch. Journ.*, xxxv, 88. | Exhibited by Mr. Matthew Bigge, November 2nd, 1877 at the Arch. Inst. |
| 68 | Northumb. | Corbridge (Site 39), 1912. | Pottery kiln, rectangular, built into room of house. Length as remaining 9 feet. Sloping cross-flue bottoms, type III. Oven-floor missing; main flue floored with tiles. Settling tanks, pottery-waste, etc., also found. | The alteration of the house probably took place in the 3rd century, or perhaps later. | *Corbridge Report*, 1912, 14–15 (figured). | The two plans in the Report (p. 14, Fig. 3 and general plan for 1912) disagree, the one showing three cross-flues, the other only two. |
| 69 | Oxon. | Hanwell (Spring Farm), 1892. | Kiln or oven containing fragments of Roman pottery. Remains not further described, and covered in again. | | *Bucks., Berks. and Oxon. Arch. Journ.*, iv, 18. *Arch.*, lxxi, 244. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 70 | Oxon. | Headington (Harry Bears's Pit). | Kilns consisting of circular clay-lined hollows, diams. *c.* 2½ feet, in rock, with prolonged flues 9 inches deep, and containing much broken pottery. Probably type IV. | | *Bucks., Berks. and Oxon. Arch. Journ.*, iv, 19.<br>*Brit. Arch. Assoc. Journ.*, vi, 52.<br>*Arch.*, lxxi, 245. | Kilns are recorded in the same locality at Shotover, Fencot on Otmoor, Headington Wick (see second reference). |
| 71 | Oxon. | Iffley (Mount Pleasant). | "Several small kilns with remains of Roman pottery." Not further described. | | Marshall, *An Account of the Township of Iffley* (1870), 156.<br>*Arch.*, lxxi, 246. | |
| 72 | Oxon. | Sandford (Minchery Farm), 1879. | Four pottery kilns. Three much ruined, the fourth probably tongue-pedestal support, type I. Also pottery, kiln-props, etc. | | Rolleston, *Scientific Papers*, ii, 937.<br>*Arch.*, lxxi, 254, and lxxii, 225 (for pottery) | |
| 73 | Oxon. | Stonesfield. | Pottery kiln. Not described. | | *Brit. Arch. Assoc. Journ.*, xii, 177. | |
| 74 | Oxon. | Wilcote. | Pottery kiln. Not described. | | *Brit. Arch. Assoc. Journ.*, xii, 177.*Archaeologia*, lxxi, 260. | |
| 75 | Rutland. | Market Overton, 1906. | Kiln described as a "circular chamber lined with baked clay", waster pottery, stands, hand-bricks. | | *Proc. Soc. Antiq.*, 2S, xxii, 48.<br>*V.C.H. Rutland*, i, 90. | The site is near an earthwork said to be Roman, and abundant remains of Roman occupation have been found nearby. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 76 | Somerset. | Bathampton. | Potsherds, cinders, etc., thought to be either a kiln or a smithy. | | *Som. Arch. Soc. Proc.*, O.S., xxii, 57. *V.C.H. Som.*, i, 357. | Doubtful. |
| 77 | Somerset. | Highbridge [1] (Polden Hills). | Potsherds, bricks, suggestive of a kiln, and other finds, including coin-moulds. | The coin-moulds belong to the period 210–80 A.D. | *Som. Arch. Soc. Proc.*, iv, 103. | |
| 78 | Somerset. | Shepton Mallet. | Pottery kilns in association with a Roman site of uncertain character: (i) Near *Charlton*, 1887, ruined. (ii) West of Shepton, one circular and domed, with pilaster supports, type III, with stone jambs to fire-hole. Nine vent-holes. | | *Som. Arch. Soc. Proc.* xiii, 1. *V.C.H. Som.*, i, 318. | |
| 79 | Staffs. | Burslem. | Indications of ancient kilns and crude pottery. | | *V.C.H. Staffs.*, i, 184. | Very doubtful: no evidence to indicate date or origin of kilns. |
| 80 | Stirling. | Mumrills. | Tile kiln, rectangular, 7 feet square (internal measurement). Cross-flues with flat bottoms, type I. Body of kiln of clay with stone facings, oven floor (destroyed) of stone slabs. | From alignment thought to be of same date as Antonine wall, but pottery found had a 1st century texture | *Proc. Soc. Antiq. Scot.*, xlix, 123 f. (figured). | |

[1] A number of similar finds is recorded in the low-lying areas of the Polden Hills region, in the parishes of Bridgwater, Burnham, Catcott, Chilton, Cossington, Edington, Huntspill, and Shapwick. These sites consist generally of low mounds composed of pottery-fragments with clay platforms nearby on which were many bricks of the type used for supporting pottery in the kiln. They have, therefore, been explained as pottery kilns, but their purpose is not altogether clear. The same is true of the many coin-moulds which have been found in the same area. See *V.C.H. Som.*, i, 353.

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 81 | Suffolk. | Melton, 1846. | Clamp for firing of tiles. Tiles mostly $14 \times 10\frac{3}{4} \times 1\frac{1}{2}$ inches, stacked to height of 3 feet, each course being separated by a layer of loam. Some of the tiles were baked while others were in the raw state. | | *V.C.H. Suffolk*, i, 313. | |
| 82 | Suffolk. | West Stow. | Two groups of kilns found :<br>(i) *West Stow Heath*, 1879 : two kilns, one 3 feet 6 inches diam. of clay and pebbles, no internal support, type IV, circular furnace. The floor had been of pierced triangular tiles. The second kiln (8 feet south of the first) diam. 3 feet. Perforated bricks $13 \times 8 \times 3$ inches, apparently supported on pillars of round bricks (at least three—diam. $6\frac{1}{2}$ inches).<br>(ii) 1890 : pottery kiln, not described, the fifth found in all. Pottery and other objects. | (ii) One of the kilns contained two coins (3 AE) of Constantine I. | (i) *Brit. Arch. Assoc. Journ.*, xxxvii, 152.<br>(ii) *Brit. Arch. Assoc. Journ.*, xlvii, 94. | (i) Advantage had been taken of the natural slope of the ground in choosing the site for the kilns, to provide an easy approach. The claypits apparently lay $\frac{1}{2}$ mile east, near the River Lark. Burials were found near the kilns. |
| 83 | Surrey. | Albury (Farley Heath), 1848. | Two kilns, with wall-foundations, pottery, and other remains. | | *Arch. Journ.*, x, 166. *Surrey Arch. Colls.*, xii, 147. | |
| 84 | Surrey. | Farnham. | A number of kilns found :<br>(i) *Whitmead*, 1893. Pottery kiln ("probably Roman or British") 4 feet under soil, 8 feet by 4 feet, floored with Roman tiles. | | (i) *Surrey Arch. Colls.*, xii, 151. *V.C.H. Surrey*, i, 362. | |

| Ref. No. | County | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| | | | (ii) *Farnham–Tilford road*, 1906. Pottery kiln, diam. 3 feet 6 inches, lined with puddled clay. Horizontal draught type, type VII. Packed with pottery sherds.<br>(iii) *Snailslynch Farm*, 1926. Two pottery kilns, ½ mile apart. Both of same type: oval, horizontal draught, type VII, the first built of clay, the second of ironstone slabs set in mortar. Dimensions of first 6 feet × 5 feet, dimensions of second not given. | | (ii) *Surrey Arch. Colls.*, xx, 231. *V.C.H. Surrey*, i, 362.<br>(iii) *Antiquaries Journ.*, viii, 48. | |
| 85 | Surrey. | Haslemere (Beeches). | "Floor of kiln," *tesserae*, burnt bones, charcoal, etc. | | *V.C.H. Surrey*, i, 364; iii, 45. | Doubtful. |
| 86 | Surrey. | Limpsfield (Ridlands Farm), 1893. | Pottery kiln, oval, of chert-stones set on edge. ? horizontal draught-type, type VII. | | *Proc. Soc. Antiq.*, 2S, xiii, 247. *V.C.H. Surrey*, i, 365. | |
| 87 | Sussex. | Chichester | Two pottery kilns, circular, the first of bricks, diam. 2½ feet, with prolonged fire-hole; the second of puddled clay with diam. of 4 feet. Internal arrangements not described. | | *Proc. Soc. Antiq.*, 2S, vii, 292. *Arch. Review*, i, 436. | |
| 88 | Warwick. | Alveston. | "Ovens for drying and baking bricks" and other industrial remains in association with a Romano–British settlement. | | *J.R.S.*, 1927, 199 f. Unpublished in detail. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 89 | Warwick. | Fenny Compton, 1881. | Quantities of pottery found, including some thought to be "wasters" from a kiln. | | *V.C.H. Warwick*, i, 246. | Doubtful. |
| 90 | Warwick. | Hartshill (Caldicot Quarries), 1891–7. | Four kilns, circular. Of the three described two were central pedestal type (type II); the third apparently had a tongue-pedestal support, type I. The largest kiln had a diameter of *c.* 4 feet, with a pedestal 2 feet high. Built throughout of clay. | | *Proc. Soc. Antiq.*, 2S, xvi, 405. *V.C.H. Warwick*, i, 246. | In the larger of the central pedestal kilns the vent-holes were graduated in size, according to their position in relation to the fire. |
| 91 | Wilts. | Milton (Bromsgrove Farm), 1893. | Two kilns, one round, the other oval, widths 3 feet 6 inches and 2 feet 8 inches respectively, apparently connected by a channel or flue 1 foot wide, the second kiln also being prolonged into a narrow flue. ? horizontal draught type. | | *Wilts. Arch. Mag.*, xxvii, 294. | The pottery, which is all of Roman date, resembles types found by Pitt-Rivers in Wansdyke (*Excavations*, iii, 32 and relic table). |
| 92 | Wilts. | Minety (Oaksey Common). | Large quantities of brick and tile fragments of Roman type in association with two large mounds, suggesting a tile and brickworks. | | *Wilts. Arch. Mag.*, xxxviii, 638; xli, 424. | No pottery or other finds have been made to prove Roman date definitely. The site has not been excavated. |
| 93 | Wilts. | Nash Hill. | Said to have been Roman kilns here. | | *Wilts. Arch. Mag.*, xxxv, 579. | Doubtful: no further information given. Medieval encaustic tiles were made at the same place. |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 94 | Wilts. | Savernake Forest. | Said to be the site of a Roman pottery, and there is a tradition that kilns have existed there. Much pottery, etc. The site has never been systematically examined. | Much of the pottery is of late Keltic type, but at least one fragment of ?Arretine ware | *Wilts. Arch. Mag.*, xli, 425. | The local conditions suggest kilns, but there is at present no positive evidence for anything more than an extensive inhabited site. |
| 95 | Worcs. | Leigh Sinton (Sandlin Farm). | Large quantities of waster tiles identical with those found at Kenchester (Magna). Kilns not yet discovered. | | *Antiq. Journ.*, v, 285. | Place names nearby are "Ashfield" and "Old Ovens". Probably the tileries for the supply of Kenchester. |
| 96 | Worcs. | Malvern Link, 1887–99. | Crude pottery found here at various periods, thought to indicate kiln-site. | | *V.C.H. Worcs.*, i, 219. Worcester Museum (pottery). | |
| 97 | Worcs. | Soddington in Mamble, 1807. | Brick clamp (?) containing 10,000 unused bricks. | | *V.C.H. Worcs.*, i, 220. | The period is uncertain: no definitely Roman remains are recorded. |
| 98 | Worcs. | Worcester, 1860. | Pottery kiln. Circular, with narrow flue 15 feet long, with inner circle raised 3 feet, and covered with a layer of burnt clay in which osiers, etc., had been mixed. ? central pedestal type. | 2 AE of Domitian, barbotine-decorated pottery, etc., but not definitely in association with kiln. | *Proc. Soc. Antiq.*, 2S, i, 148. Binns, *A Century of Potting in Worcester* (1877), 290 ff. *V.C.H. Worcs.*, i, 207. | |

| Ref. No. | County. | Site. | Description. | Evidence of Date. | References. | Notes. |
|---|---|---|---|---|---|---|
| 99 | Yorks. | Barnsby. | The indications of Roman potteries referred to by the writer in *Arch. Review* (*see* references) are not described in either of the references given by him, only burials being briefly described. | | Camden, *Britannia* iii, 311. *Gents. Mag.*, 1767, 522. *Arch. Review*, ii, 337. | |
| 100 | Yorks. | Castle Howard (Crambeck), 1927. | Four pottery kilns arranged in pairs. All with no floor support, type IV. The first pair were unusual in being built apparently *on* instead of excavated *in* the natural soil in usual way. Other remains, including kilns, found at earlier periods. Diams. of kilns found 1927 : A. 3ft. 9ins. ; B. 2ft. ; C. 3ft. 3ins. ; D. 3ft. 3ins. | Samian : 100-50 A.D. Coin : 1, Nerva (2 AE ; 96–8 A.D.). Coarse pottery : late 3rd century onwards. | Corder, *The Roman Pottery of Crambeck, Castle Howard* (1928), *passim.* | These groups were in use during the 3rd–4th centuries, but the earlier finds show that kilns existed before this date on other parts of the site. As elsewhere (above, p. 42), the kilns were moved as the immediate source of fuel became exhausted. |
| 101 | Yorks. | Slack, 1824. | So-called " tile-kiln " found in 1824, with tiles stamped COH IIII BRE. The find was apparently not a tile kiln but a hypocaust (see notes). | | *Gents. Mag.*, 1824, i, 261 ; 1846, i, 821. *Yorks. Arch. Journ.*, i, 3 ; ii, 56. *Arch. Review*, ii, 340. | The explanation of the remains as given in the 1824 account (*Gents. Mag.*) is contradicted in the later accounts (1846, etc.). The structure was moved to the grounds of B. H. Allen, Esq., Green Head, Huddersfield. |

The following doubtful sites are not incorporated. The numbering is continued from the list :

102. Brighstone, I.O.W. (*V.C.H. Hants*, i, 318).
103. East Tilbury, Essex (*R.C.H.M. Essex*, iv, 39).
104. Sulhamstead Bannister, Berks. (*V.C.H. Berks.*, i, 215).

## V.—CATALOGUE OF FINDS.

The numbers in brackets after each item are the running numbers given to that item in the Accession Register of the Department of Archæology of the National Museum of Wales, under the accession number 25.1.

The following abbreviations are used, particularly in the sections on pottery :

*Acton Letters* (with date) = Letters of T. A. Acton to the late Professor Haverfield, preserved in the Haverfield Library, Ashmolean Museum, Oxford.

*Balmuildy* = Miller, S. N., *The Roman Fort at Balmuildy*, 1922.

*B.M.C.* = Walters, H. B., *Catalogue of Roman Pottery in the Department of Antiquities, British Museum*, 1908.

*B.M.C. of Lamps* = Walters, H. B., *Catalogue of Greek and Roman Lamps*, British Museum.

*Bonn. Jahrb.* = *Bonner Jahrbücher.*

*Caerleon Amphitheatre* = Wheeler, R. E. M. and T. V. Wheeler, "The Roman Amphitheatre at Caerleon in Monmouthshire", *Archaeologia*, lxxviii, 111–218.

*Caerleon I* = Nash-Williams, V. E., "The Roman Legionary Fortress at Caerleon in Monmouthshire, Report on Excavations carried out in 1926," *Archæologia Cambrensis*, 1929, pp. 237–307.

*Corbridge* 1911 = Bushe-Fox, J. P., "Report on the 1911 Excavations at Corstopitum—The Pottery," *Archæologia Æliana*, 3rd series, vol. viii, 168–85.

*Crambeck Pottery* = Corder, P., *The Pottery of Crambeck, Castle Howard*, 1928.

Curle, *Newstead* = *The Fort of Newstead in the Parish of Melrose*, 1911.

D. = Déchelette, J., *Les Vases céramiques ornés de la Gaule romaine*, 1904.

*Forden Gaer* = Pryce, T. D. and F. N. Pryce, "The Forden Gaer, Second Interim Report—The Pottery," *Archæologia Cambrensis*, 1929, pp. 129–36.

Forrer, *Heiligenberg* = Forrer, E., *Die römischen Terra-sigillata Töpfereien von Heiligenberg*, etc.

*Gelligaer* = Ward, J., *The Roman Fort at Gelligaer*, 1903.

Haverfield, *Inscribed Stones* = Haverfield, F., *Catalogue of the Roman Inscribed Stones in the Grosvenor Museum, Chester*, 1900.

K. 1919 = Knorr, R., *Töpfer und Fabriken verzierter Terra Sigillata des ersten Jahrhunderts*, 1919.

K. *Rottenburg* = Knorr, R., *Terra Sigillata Gefässe von Rottenburg*, 1910.

K. Rottweil = Knorr, R., *Terra Sigillata Gefässe von Rottweil*, 1904.

Ludowici I–IV = Ludowici, W., *Ausgrabungen in Rheinzabern*, 4 vols., 1901–1912.

May, *Carlisle Pottery* = May, T., "Catalogue of the Roman Pottery in the Museum, Tullie House, Carlisle," *Cumberland and Westmorland Antiquarian and Archæological Society's Transactions, XVII* (N.S.), pp. 114–97.

May, *Roman Warrington* = May, T., *Warrington's Roman Remains*.

May, *Silchester* = May, T., *The Pottery found at Silchester*, 1916.

May, *York Pottery* = May, T., *Roman Pottery in York Museum*, 1912.

*New Forest Pottery Sites* = Sumner, Heywood, *Excavations in New Forest Pottery Sites*.

Newstead, *Deanery Field*, I–II = Newstead, R., "Excavations on the Site of the Roman Camp at the Deanery Field, Chester," Reports I and II, *Annals of Archæology and Anthropology*, Liverpool University, xi, pp. 59–86 and xv, pp. 2–32. 1924–8.

Newstead, *Infirmary Field*, I–II = Newstead, R., "The Roman Cemetery in the Infirmary Field, Chester," Reports I–II. *Annals of Archæology and Anthropology*, Liverpool University, vi, pp. 121–67; viii, pp. 49–60. 1914–18.

Newstead, *Records* = Newstead, R., "Records of Archaeological Finds at Chester," *Chester Archæological Society's Journal*, xxvii, pp. 69–162. 1928.

Oelmann, *Niederbeiber* = Oelmann, F., *Die Keramik des Kastells Niederbeiber*, 1914.

O. and P. = Oswald, F. and T. D. Pryce, *An Introduction to the Study of Terra Sigillata*, 1920.

ORL = *Die obergermanisch-rätische Limes des Römerreiches*.

*Richborough*, I–II = Bushe-Fox, J. P., *Excavation of the Roman Fort at Richborough*. Reports I and II.

Wheeler, *Brecon Gaer* = Wheeler, R. E. M., *The Roman Fort at Y Gaer, Near Brecon*, 1926.

Wheeler, *Segontium* = Wheeler, R. E. M., *Segontium and the Roman Occupation of Wales*. 1923.

Wroxeter, I–III = Bushe-Fox, J. P., *Excavations on the Site of the Roman Town at Wroxeter, Shropshire.* Reports, I–III. 1912–14.

## 1. Coins.

The coins found numbered 77 in all. 76 of these are in the Holt Collection, the remaining one (No. 58 in list) being in the Wrexham Museum. I have to thank Mr. Harold Mattingly of the British Museum for help with a number of doubtful specimens.

In addition to the coins recovered by excavation a much corroded brass coin of Nero (with VICTORIA reverse) was found by Mr. T. Lewis on the Wall Lock field in November 1905.[1] The paper in which this coin was kept, with particulars of its finding, is included in the collection; but the Emperor Nero is not represented in the series, and the coin itself would appear to have been lost.

The coins range from the middle of the second century B.C. to the middle of the fourth century A.D. Third- and fourth-century emperors are only sparsely represented, and the total of 53 coins for the Vespasian–Hadrian period indicates the last few years of the first century and the first half of the second century, as probably the period of greatest activity.

The majority of the coins have no find-spot recorded for them, and are therefore of value only in a general way for chronological purposes.

The following authorities are quoted:

Grueber, H. A.: *Coins of the Roman Republic in the British Museum*, 1910.

Cohen, H.: *Monnaies frappées sous l'Empire romain*, 2nd edn., 1880.

Webb, P. H.: "The Coinage of Allectus," *Numismatic Chronicle*, 1906, pp. 127–71.

[1] *Arch. Camb.*, 1906, p. 229. The coins of Antoninus, etc., mentioned by Pennant (see above, p. 4) are left out of account for lack of detailed evidence as to provenance, etc. They do not appear to have been found on the present site.

(i) *Summary.*

| Emperor. | Dates. | AR. | 1Ae. | 2Ae. | 3Ae. | Totals. |
|---|---|---|---|---|---|---|
| Republican .. | to 50 B.C. | 4 | — | — | — | 4 |
| Probably Claudius I.. | 41–54 A.D. | — | — | 1 | — | 1 |
| Vespasian .. .. | 69–79 A.D. | 3 | 1 | 6 | — | 10 |
| Titus .. .. | 72–81 A.D. | — | — | 1 | — | 1 |
| Domitian .. .. | 81–96 A.D. | 1 | 7 | 11 | — | 19 |
| Probably Flavian .. | 69–96 A.D. | — | — | 1 | — | 1 |
| Nerva .. .. | 96–98 A.D. | — | 3 | 2 | — | 5 |
| Trajan .. .. | 98–117 A.D. | 1 | 4 | 5 | — | 10[1] |
| Hadrian .. .. | 117–138 A.D. | — | 3 | 2 | — | 5 |
| Sabina .. .. | *d.* 137 A.D. | 1 | — | — | — | 1 |
| Lucius Verus .. | 161–169 A.D. | — | 1 | — | — | 1 |
| Faustina II .. | *d.* 175 A.D. | — | 1 | — | — | 1 |
| Crispina .. .. | *d.* 183 A.D. | — | 1 | — | — | 1 |
| ? Commodus .. | 175–192 A.D. | — | — | 1 | — | 1 |
| Probably Antonine .. | | — | — | 1 | — | 1 |
| Late 1st–2nd century | | — | 1 | 1 | — | 2 |
| Gordianus III, Pius.. | 238–244 A.D. | — | 1 | — | — | 1 |
| Claudius II, Gothicus | 269–270 A.D. | — | — | — | 1 | 1 |
| Tetricus I .. .. | 267–273 A.D. | — | — | — | 1 | 1 |
| Carausius .. .. | 287–293 A.D. | — | — | — | 1 | 1 |
| Allectus .. .. | 293–296 A.D. | — | — | 1 | — | 1 |
| Constantine I .. | 306–337 A.D. | — | — | — | 1 | 1 |
| Constantinopolis .. | 333–335 A.D. | — | — | — | 2 | 2 |
| Urbs Roma .. | 333–335 A.D. | — | — | — | 1 | 1 |
| Constantine Family.. | | — | — | — | 1 | 1 |
| Imitation radiate .. | | — | — | — | 1 | 1 |
| Unidentifiable .. | | — | — | 2 | — | 2 |
| Totals .. | | 10 | 23 | 35 | 9 | 77 |

(ii) *Detailed List.*

A. Republican (*Denarii*).

*Uncertain attribution* (*c.* 150 B.C.).

1. *Obv.* Illegible. Head of Roma.
   *Rev.* Illegible. Dioscuri r. AR.
   Condition when lost: worn.

*C. Vibius Pansa* (*c.* 87 B.C.).

2. *Obv.* Head of Apollo r. Behind PANSA.
   *Rev.* Minerva in quadriga r. In exergue: C VIBIVS [ ]. AR.
   Cf. Grueber, i, p. 190, Nos. 2244 ff.
   Condition when lost: worn.

[1] Another coin of Trajan (2Ae) was found on the surface of the Wall Lock in 1923 (Ellis Davies, *Prehistoric and Roman Remains of Denbighshire*, p. 155).

*C. Julius Cæsar* (100–44 B.C.).

3. *Obv.* Head of Venus diademed r.
*Rev.* CÆSAR. Æneas carrying Palladium and Anchises l.
Cohen 12. *c.* 50 B.C. AR.
Condition when lost: fairly good.

*Marcus Antonius* (44–31 B.C.).

4. *Obv.* Galley r. with rowers. Illegible.
*Rev.* Illegible.
*c.* 33–31 B.C. AR (Legionary denarius).
Condition when lost: much worn.

B. Imperial.

*Probably Claudius I* (41–54 A.D.).

5. Illegible. ? LIBERTAS reverse. ? 2 Ae.
Condition when lost: very much worn.

*Vespasian* (69–79 A.D.).

*Denarii.*

6. *Obv.* IMP CÆSAR VESPASIANVS AVG. Head laureate r.
*Rev.* COS ITER TR POT. Female figure seated l. holding branch and caduceus. In exergue: ROMA.
Not in Cohen; see Corbridge Report, 1911, p. 106. AR. 70 A.D.
Condition when lost: fairly good.

7. *Obv.* IMP CÆS]AR VESPASIANVS AVG. Head laureate r.
*Rev.* COS] ITER TR POT. Female figure seated l. holding branch and caduceus. ? In exergue: ROMA.
Not in Cohen (see above, 6). AR. 70 A.D.
Condition when lost: fairly good.

8. *Obv.* IMP CÆSAR VE[SPASIAN(VS ?)] AVG. Head laureate r.
*Rev.* COS ITER TR POT. Female figure seated l. holding branch and caduceus ? In exergue: ROMA.
Not in Cohen (see above, 6). AR. 70 A.D.
Condition when lost: fairly good.

*Sestertius.*

9. *Obv.* IMP CÆS VESPASIAN AVG P M TR P CENS POT P P. Head laureate r.
*Rev.* Illegible. 1 Ae.
Condition when lost: good.

*Dupondii.*

10. *Obv.* IMP CÆS VESPASIAN AVG COS [? VIII] P P. Head laureate r. with globe beneath.

*Rev.* FIDES PVBLICA. Fides standing front holding patera and cornucopia. In field: S.C.
? Cohen 166. 77–78 A.D. 2 Ae.
Condition when lost: fairly good.

11. *Obv.* IMP CÆSAR VESPASIAN AVG COS[ . Head laureate r.
*Rev.* Illegible. ? Soldier standing l. 2 Ae.
Condition when lost: worn.

12. Illegible. Bust r. 2 Ae.
Condition when lost: worn.

*Asses.*

13. *Obv.* IMP CÆSAR VESPASIAN AVG[ . Head radiate r.
*Rev.* Illegible. 2 Ae.
Condition when lost: ?

14. *Obv.* ]ASIAN[ . Head r.
*Rev.* Illegible. 2 Ae.
Condition when lost: ?

15. *Obv.* Illegible. Head r.
*Rev.* Illegible. ? FORTVNA. 2 Ae.
Condition when lost: ?

*Titus* (72–81 A.D.).

*Dupondius.*

16. *Obv.* T CAES IMP AVG TR P COS VI CENSOR. Head laureate r. with globe beneath.
*Rev.* VICTORIA NAVALIS. Winged Victory on prow, r. holding wreath and palm. In field: S.C.
Cohen 390. 77 or 78 A.D. 2 Ae.
Condition when lost: good.

*Domitian* (81–96 A.D.).

*Denarius.*

17. *Obv.* IMP CÆS DOMIT AVG GERM [P M TR P VII. Head laureate r.
*Rev.* IMP XIIII COS XIIII CENS P P P. Pallas l. draped and helmed and holding spear.
Cohen 233. 88 A.D. AR.
Condition when lost: good.

*Sestertii.*

18. *Obv.* IMP [CÆS DIVI] VESP F [DOMITIAN] AVG P M. Head laureate l.
*Rev.* TR P COS V [II DES VIII] P P. Pallas standing l., holding spear. In field: S.C.
Cohen 556. 81 A.D. 1 Ae. Condition when lost: good.

19. *Obv.* IMP CÆS DOMIT AVG GERM COS XI CENS POT P P. Head laureate r.
*Rev.* No legend. ? Domitian standing l. holding ? parazonium and spear, with helmet and cuirass at feet. In field : S.C.
? Cohen. 85 A.D. 1 Ae.
Condition when lost : fairly good.

20. *Obv.* IMP CÆS DOMIT AVG GERM COS XII CENS PER P P. Head laureate r.
*Rev.* No legend. Domitian standing l. holding torch and spear, and crowned by Victory, holding palm. In exergue : S.C.
Cohen 510. 86 A.D. 1 Ae.
Condition when lost : good.

21. *Obv.* IMP CÆS DOMIT AVG GERM COS XIII CENS PER P P. Head laureate r.
*Rev.* IOVI VICTORI. Jupiter seated l. holding Victory and sceptre. In exergue : S.C.
Cohen 311. 87 A.D. 1 Ae.
Condition when lost : good.

22. *Obv.* IMP CÆS DOMIT AVG GERM COS XVI CENS PER P. Head laureate r.
*Rev.* IOVI] VICTORI. Jupiter seated l. holding Victory and sceptre. In exergue : S.C.
Cohen 315. 92–94 A.D. 1 Ae.
Condition when lost : good.

23. *Obv.* IMP CÆS DOMIT AVG GERM COS XVII CENS PER P P. Head laureate r.
*Rev.* IOVI VICTORI. Jupiter seated l. holding Victory and sceptre. In exergue : S.C.
Cohen 316. 95 A.D. 1 Ae.
Condition when lost : good.

24. Illegible. Uncertain attribution. 1 Ae.
Condition when lost : ?

*Dupondii.*

25. *Obv.* IMP CÆS DOMIT AVG GERM C[OS . . . CENS POT P P]. Head laureate r.
*Rev.* No legend. Mars marching l. helmed, etc., holding a Victory and trophy. In field : S.C.
Cohen 429, etc. 85–87 A.D. 2 Ae.
Condition when lost : fairly good.

26. *Obv.* IMP CÆS DOMIT AVG GERM COS XIII CENS PER P P. Head laureate r.
*Rev.* VIRTVTI AVGVSTI. Virtus standing r. holding spear and parazonium. In field : S.C.

Cohen 650. 87 A.D. 2 Ae.
Condition when lost: good.

27. *Obv.* IMP CÆS DOMIT AVG GERM COS XIII CENS PER P P. Head laureate r.
*Rev.* [FORTVNÆ] AVGVSTI. Fortune standing l. holding tiller and cornucopia.
Cohen 125. 87 A.D. 2 Ae.
Condition when lost: fairly good.

28. *Obv.* ]AVG GERM COS[ ]. Head laureate r.
*Rev.* [? FORTVNAE AVGVSTI]. Draped female figure standing l.
*Cf.* Cohen 118, etc. 2 Ae.
"Found at the bottom of Hilly Field." Condition when lost: fairly good.

*Asses.*

29. *Obv.* IMP CÆS DOMIT AVG GERM COS XIII CENS PER P P. Head laureate r.
*Rev.* VIRTVTI [AVGVST] I. Virtus standing r. holding spear and parazonium, with foot on helmet. In exergue: ?
Cohen 651. 87 A.D. 2 Ae.
Condition when lost: fairly good.

30. *Obv.* IMP CÆS DOMIT AVG GERM COS XIII CEN S PER P P. Head laureate r.
*Rev.* [VIRTVTI AVGVSTI]. Virtus standing r. holding spear and parazonium, with foot on helmet.
Cohen 651. 87 A.D. 2 Ae.
Condition when lost: fairly good.

31. *Obv.* IMP CA ]ES DOMITIAN[. Bust laureate, ? draped r.
*Rev.* FORTVNAE AVGVSTI. Fortuna standing l. holding tiller and cornucopia. In field: S.C.
Cohen 118, etc. 85–95 A.D. 2 Ae.
From firehole of No. 4 kiln. Condition when lost: fairly good.

32. *Obv.* Illegible. Head r.
*Rev.* ? FORTVNA. 2 Ae.
Condition when lost: ?

33. *Obv.* Illegible. Head r.
*Rev.* Illegible. 2 Ae.
Condition when lost: ?

34. *Obv.* Illegible. Head r.
*Rev.* Illegible. 2 Ae.
Condition when lost: ?

35. Illegible. Uncertain attribution. 2 Ae.
Condition when lost: much worn.

*Probably Flavian* (69–96 A.D.).

*As.*

36. Illegible. 2 Ae.
Condition when lost: ?

*Nerva* (96–98 A.D.).

*Sestertii.*

37. *Obv.* IMP NERVA CÆS AVG P M TR P COS III P P. Head laureate r.
*Rev* PLEBEI VRBANÆ FRVMENTO CONSTITVTO. Modius with six ears of corn and poppy. In field: S.C.
Cohen 127. 97 A.D. 1 Ae.
Condition when lost: good.

38. *Obv.* IMP NERVA CÆS AVG P M TR P COS III P P. Head laureate r.
*Rev.* ROMA RENASCENS. Roma seated l. holding Victory and spear. In exergue: S.C.
Cohen 131. 97 A.D. 1 Ae.
Condition when lost: very good.

39. *Obv.* IMP NERVA CÆS [AVG P M TR P COS III (?) P P] . Head laureate r.
*Rev.* FORTVNA AVGVST. Fortuna standing l. holding tiller and cornucopia. In field: S.C.
? Cohen 67. ? 97 A.D. 1 Ae. Condition when lost: fairly good.

*Asses.*

40. *Obv.* IMP NERVA CÆS AVG P M TR P COS III P P. Head laureate r.
*Rev.* ÆQVITAS AVGVST. Æquitas holding scales and cornucopia. In field: S.C.
Cohen 7. 97 A.D. 2 Ae.
Condition when lost: fair.

41. *Obv.* IMP NERVA CÆS . . . . Head laureate l.
*Rev.* Illegible. ? Victory walking l. holding wreath and palm. In field: S.C. 2 Ae.
Condition when lost: ?

*Trajan* (98–117 A.D.).

*Denarius.*

42. *Obv.* IMP CÆS NERVA TRAIAN AVG GERM. Head laureate r.
*Rev.* P M TR P COS IIII P P. Victory, winged, standing r. on prow, holding wreath and palm.
Cohen 241. 101 or 102 A.D. AR.
Condition when lost: good.

*Sestertii.*

43. *Obv.* ]AVG GER DAC[. Bust laureate r.
*Rev.* S P Q R OPTIMO PRINCIPI. Fortuna standing l. holding tiller and cornucopia.
Cohen 477 (?) 104–110 A.D. 1 Ae.
Condition when lost: fairly good.

44. *Obv.* IMP CÆS NER TRAIANO OPTIMO AVG GER DAC PARTHICO P M TR P COS VI P P. Bust laureate r.
*Rev.* REX PARTHIS DATVS. Trajan seated l. accompanied by Prætorian Prefect, presents king to Parthian kneeling r.
Cohen 328. 116 A.D. 1 Ae.
Condition when lost: very good.

45. Illegible. FORTVNA reverse. 1 Ae.
Condition when lost: ?

46. Illegible. Head laureate r. 1 Ae.
Condition when lost: ?

*Dupondii.*

47. *Obv.* IMP NERVA CÆS TRAIAN AVG GERM P M. Head radiate r.
*Rev.* TR POT COS II P P. Fortuna seated l. on seat having arms ending in cornucopiæ, holding sceptre. In exergue: S.C.
Cohen 618. 98 A.D. 2 Ae.
Condition when lost: very good.

48. Illegible, but ? as above, No. 47. 2 Ae.
Condition when lost: fairly worn.

*Asses.*

49. *Obv.* Illegible. Head radiate r.
*Rev.* Illegible. Trophy. In field: S.C. 2 Ae.
Condition when lost: probably good.

50. Illegible. ? FORTVNA reverse. 2 Ae.
Condition when lost: ?

51. Illegible. Radiate head r. (probably early). 2 Ae.
Condition when lost: much worn.

*Hadrian* (117–138 A.D.).

*Sestertii.*

52. *Obv.* Illegible. Head r.
*Rev.* Illegible. Female figure seated l. 1 Ae.
Condition when lost: probably good.

53. Illegible. Uncertain attribution. 1 Ae.
Condition when lost: ?

54. Illegible. Uncertain attribution. 1 Ae.
Condition when lost: worn.

*Asses.*

55. *Obv.* Legend illegible. Radiate head r.
*Rev.* ? FORTVNA. In field: S.C. 2 Ae.
Condition when lost: probably good.
56. Illegible. Head r. 2 Ae.
Condition when lost: ?

*Sabina* (*d.* 137 A.D.)

*Denarius.*

57. *Obv.* SABINA AVGVSTA. Head diademed r.
*Rev.* VENERI GENETRICI. Venus standing front, holding apple and drawing on robe.
Cohen 73. AR.
Condition when lost: good.

*Lucius Verus* (161–169 A.D.).

*Sestertius.*

58. *Obv.* L VERVS AVG ARM PARTH MAX TR P VIIII. Bust, laureate, draped, cuirassed, r.
*Rev.* No legend. Rome seated on trophy l., with foot on helmet, between winged Victory crowning her from rear, and the Emperor in military costume, presenting her with an olive branch, and holding a spear. In exergue: COS III.
Cohen 66. 161 A.D. 1 Ae.
Condition when lost: excellent. (Now in Wrexham Museum).

*Faustina II* (*d.* 175 A.D.)

*Sestertius.*

59. *Obv.* DIVA FAVSTINA PIA. Bust draped r.
*Rev.* DIANA LVCIFERA. Diana standing holding torch transversely in both hands, with lunar crescents behind head. In field: S.C.
Cohen 90. 1 Ae.
Condition when lost: worn.

*Crispina* (*d.* 183 A.D.)

*Sestertius.*

60. *Obv.* CRISPINA AVG IMP COMMODI AVG . Bust draped r.
*Rev.* SALVS. Figure seated l. feeding serpent entwined around altar. In exergue: S.C.
Cohen 32. 1 Ae.
Condition when lost: ?

*? Commodus* (175–192 A.D.)

*As.*

61. Illegible. Head r. Doubtful attribution. 2 Ae.
Condition when lost : ?

*Probably Antonine.*

*As.*

62. Illegible. Uncertain attribution. 2 Ae.
Condition when lost : very much worn.

*Unidentifiable* (1st–2nd century).

*Sestertius.*

63. Illegible. Much corroded. 1 Ae.
Condition when lost : ?

*As.*

64. Illegible. Much corroded. 2 Ae.
Found on surface of field next to Wall Locks, 1909.
Condition when lost : ?

*Gordianus III, Pius* (238–244 A.D.)

*Sestertius.*

65. *Obv.* IMP GORDIANVS PIVS FEL AVG. Bust laureate r.
*Rev.* IOVI STATORI. Jupiter standing front, looking r. and holding sceptre and thunderbolt.
Cohen 3. 1 Ae.
Condition when lost : good.

*Claudius II, Gothicus* (269–270 A.D.)

66. *Obv.* IMP C CL]AVDIVS AVG. Head radiate r.
*Rev.* AEQ]VITAS A[VG. Aequitas standing l. holding balance and cornucopia.
Cohen 7. 3 Ae.
Condition when lost : probably good.

*Tetricus I* (267–273 A.D.)

67. *Obv.* ]RICVS P F AVG. Bust, radiate draped r.
*Rev.* PAX AVG. 3 Ae.
Condition when lost : good.

*Carausius* (287–298 A.D.)

68. *Obv.* ]S P F AVG. Bust radiate cuirassed r.
*Rev.* PAX A [VG. Pax standing l. holding olive branch and sceptre. 3 Ae.
Found on surface of field next to Wall Locks. Condition when lost : worn.

*Allectus* (293–296 A.D.)

69. *Obv.* IMP C ALLECTVS P F AVG. Bust radiate cuirassed r.

*Rev.* PAX AVG. Pax standing l. holding olive-branch and sceptre. In field: S.A. In exergue: ML.
Webb 39. 2 Ae.
From surface-soil. Condition when lost: good.

*Constantine I* (306–337 A.D.)

70. *Obv.* CONSTANTINVS MAX AVG. Bust diademed draped r.
*Rev.* GLOR]IA EXERCITVS. Two soldiers helmed and carrying spears and shields, with two standards between. In exergue: TR.S (?).
Cohen 254. 3 Ae.
Condition when lost: fairly good.

*Constantinopolis* (333–335 A.D.)

71. *Obv.* CONSTANTINOPOLI. Bust cloaked and helmed l. holding sceptre.
*Rev.* No legend. Winged Victory standing l. with right foot on prow, holding sceptre and shield. In exergue: TRS.
Cohen 21. 3 Ae.
Condition when lost: very good.

72. *Obv.* C]ON[STANTINOPOLI (S?). Defaced.
*Rev.* No legend. Victory standing l. with right foot on prow. holding sceptre and shield. In exergue: TR S.
? Cohen 21. 3 Ae.
Condition when lost: good, but badly clipped.

*Urbs Roma* (333–335 A.D.)

73. *Obv.* VRBS ROMA. Bust helmed l. with imperial mantle.
*Rev.* No legend. Wolf l. with twins. In field above: two stars. In exergue: TRS.
Cohen 17. 3 Ae.
From surface-soil. Condition when lost: good.

*Constantine family.*

74. *Obv.* CONS[ . Bust r.
*Rev.* ? GLORIA EXERCITVS type.
From surface-soil. Condition when lost: good.

*Imitation-radiate* (4th century.)

75. From surface-soil. Condition when lost: good.

*Unidentifiable.*

76, 77. Two coins, both 2 Ae, very much worn

### 2. Samian Ware.[1]

The following summary, based on the decorated fragments illustrated, and the definitely identifiable potters' stamps, indicates the range of the Holt Samian ware.

| Period | Dec'rated Wares | Potters' Stamps | Totals |
|---|---|---|---|
| Flavian .. .. .. | 28 | 19 | 47 |
| Domitian–Trajan .. .. | 59 | 7 | 66 |
| Trajan–Hadrian .. .. | 54 | 6 | 60 |
| Trajan–Antonine .. .. | — | 1 | 1 |
| Hadrian–Antonine .. | 28 | 5 | 33 |
| Antonine .. .. | 4 | 1 | 5 |
| Totals .. .. | 173 | 39 | 212 |

The following points are of interest:

1.—Drag. 29 is represented by one fragment only;

2.—Late first—second century (Domitian-Hadrian) types outnumber the remainder by two to one;

3.—The series is carried through the Hadrianic and Antonine periods, though on a much reduced scale.

The plain wares fall into line with the decorated. No pre-Flavian forms are present.

All decorated fragments of any size are illustrated, together with a selection of the plain forms.

For the authorities used, and the abbreviations by which they are cited in the text, see above, p. 85.

#### (i) Decorated Ware.

Fig. 34.

1.—Drag. 29. Good ware and glaze. Upper frieze: small tendril pattern (*cf. B.M.C.*, Pl. XXXVII, 26). Lower frieze: panel decoration: (i) mostly wanting—tendril and leaf (K., 1919, Fig. 12—MELVS, MOMMO); (ii) corner tendrils enclosing medallion, mostly wanting. *Period:* Flavian. (328)

2.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze: straight wreath (*B.M.C.*, Pl. XXXIII, 10). Lower frieze: panel decoration: (i) " pinnate leaves ";

[1] In this section I have to thank Mr. T. Davies Pryce for much help and advice, and Dr. F. Oswald, for information as to the stamps.

(ii) medallion with hare l. (D. 951—MEDILLVS, VOLVS), and small rosettes in corners. And repeat. *Period :* Flavian. (329 a–d)

3.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : band of S-shaped godroons. Lower frieze : ? small tendril-pattern, with leaf and stipule resembling O. & P., Pl. XXXI, 30. *Period :* Flavian. (330)

4.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : part of festoon pattern, a variant of *B.M.C.*, Pl. XXXVIII, 5. Lower frieze : ? animals and shrubs : dogs r. (*cf.* D. 916, etc.) and palmette. *Period :* Flavian. (331)

5.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze (mostly wanting) : festoon pattern. Below : a band of small, six-petalled rosettes. Lower frieze : palmette composed of plant forms as K., 1919, Pl. 44, 10—IVSTI, with boar, incomplete (*cf. ibid.*, Pl. 70, 5). Below : band of S-shaped godroons. *Period :* Flavian. (332)

6.—Drag. 37. Good ware and glaze. ? Transitional decoration. Upper frieze (?) : festoons containing leaves (*cf.* K., 1919, Pl. 75, 35, as used by Senicio) and winged animal l. (*ibid.*, Pl. 28, 19). *Period :* Flavian. (333)

7.—Drag. 37. Good ware and glaze. ? Transitional decoration. Festoons resembling *B.M.C.*, Pl. XXXVIII, 7. *Period :* Flavian. (334)

8.—Drag. 37. Good ware and glaze. ? Transitional decoration : frieze with animals and shrubs with vine-terminals ; stag r. (D. 845) and shrub, with band of S-shaped godroons below. *Period :* Flavian. (335)

9.—Drag. 37. Good ware and glaze. ? Transitional decoration. Upper frieze : animals and shrubs ; stag r. (*cf.* D. 855, etc.) over conventionalized rocks and shrub with vine-terminals (variant of D. 1136). *Period :* Flavian. (336)

10.—Drag. 37. Good ware and glaze. Plants with festoon containing Cupid r. (*cf.* K., *Rottenburg*, Pl. I, 11). *Period :* Flavian. (337)

11.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting ; (ii) Cupid r., incomplete, of uncertain type (but *cf.* D. 268), with grass-tufts below, and corner-tendril with spiral-terminal. *Period :* Flavian. (338)

12.—Drag. 37. Good ware and glaze. ? Transitional decoration : band of festoons containing scrolls, incomplete, with straight wreath (cf. *B.M.C.*, XXXIII, 16) below. *Period :* late Flavian. (339)

13.—Drag. 37. Good ware and glaze. ? Transitional or panel decoration. Stag l. (*cf.* D. 875) over grass-tuft. Lower

frieze (or panel) mostly wanting. *Period :* late Flavian. (340)

14.—Drag. 37. Good ware and glaze. Tendrils with vine leaf. *Period :* late Flavian. (341)

15.—Drag. 37. Good ware and glaze. Panel decoration : (i) two gladiators facing (*cf.* D. 604) over grass tufts ; (ii) simple cruciform pattern, incomplete. Below : straight wreath of indeterminate type. *Period :* late Flavian. (342)

Fig. 35.

16.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : large tendril pattern, the upper spaces containing pairs of leaves and a tendril, with bird in field, the lower space divided horizontally, upper compartment—" pinnate leaves ", lower—hare running r. Lower frieze panelled : (i) animal l. (mostly wanting) ; (ii) " pinnate leaves " between oblique zigzags ; (iii) lion r. (D. 747—FLORVS). *Period :* late Flavian. (343)

17.—Drag. 37. Good ware and glaze. Large tendril pattern, the lower spaces containing cruciform ornament as K., *Rottweil*, Pl. XIX, 3, upper spaces, two large leaves with tendril and bird (*cf.* K., 1919, Pl. 83, 21). Below : straight wreath (cf. *ibid.*, Pl. 57 B, etc.). *Period :* late Flavian. (344 a–b)

18.—Drag. 37. Good ware and glaze. Part of large tendril pattern, the lower spaces divided horizontally into two compartments, the upper containing a dog (?) r. (*cf.* K., 1919, Pl. 48—MACER), the lower, " pinnate leaves," and the upper space containing two leaves and tendrils (K., 1919, Fig. 45 A —IVCVNDVS). *Period :* late Flavian. (345)

19.—Drag. 37. Good ware and glaze. Panel decoration : (i) double vertical panel, upper compartment—dog (D. 916 *bis*) pursuing hare (D. 942) r. ; lower—double festoon containing leaf and stipule (O. & P., Pl. XXXVII, 63) and bird l. (D. 1012) ; (ii) retiarius r. (D. 622—VALERIVS) confronting gladiator l. (D. 620) ; (iii) = (i). *Period :* late Flavian. (346)

20.—Drag. 37. Good ware and glaze. Panel decoration : (i) cruciform ornament, mostly wanting ; (ii) Jupiter seated r. (*cf.* D. 6) ; (iii) cruciform ornament, mostly wanting. *Period :* late Flavian. (347)

21.—Drag. 37. Good ware and glaze. Panel decoration : (i) Silenus r. (D. 323) ; (ii) double vertical panel, upper compartment—bird r. (D. 1031—VOLVS), lower—grass tufts ; (iii) double vertical panel, upper compartment—mostly wanting, lower—festoon, incomplete. *Period :* late Flavian. (348)

22.—Drag. 37. Good ware and glaze. Fragmentary panel decoration : cruciform ornament (incomplete) made up of

plant forms as K., 1919, Pl. 44, 10—IVSTI. *Cf.* also above. *Period:* late Flavian. (349)

23.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—cruciform ornament (*B.M.C.*, Pl. XL, 2); (ii) retiarius and gladiator (D. 622 and 620 respectively—and *cf.* 19 above), with narrow panel containing grass tufts below; (iii) = (i). *Period:* late Flavian. (350)

Fig. 36.

24.—Drag. 37. Good ware and glaze. Panel decoration: (i) cruciform ornament (*B.M.C.*, Pl. XL, 7); (ii) double vertical panel, incomplete, upper compartment mostly wanting, lower compartment—cruciform ornament (O. & P., Pl. IX, 8). Below: straight wreath of S-shaped godroons. *Period:* late Flavian. (351 a–b)

25.—Drag. 37. Good ware and glaze. Panel decoration: Fragment (*a*): (i) ? triple vertical panel as (iii)—upper and middle compartments mostly wanting, lower—dolphin r. (*cf.* K., 1919, Pl. 61, A); (ii) Silenus r. playing double flute (D. 310); (iii) = (i) triple vertical panel: upper compartment—hare r. (*cf.* K., 1919, Pl. 33, 1), middle—row of pointed leaves arranged as straight wreath, lower—dolphin, as (i); (iv) male figure l.; (v) triple vertical panel as (iii), all panels mostly wanting. Fragment (*b*) probably part of same bowl: a triple vertical panel as before, upper compartment– incomplete, dog r. (? D. 916 *bis*—MALCIO) chasing hare, middle (mostly wanting)—straight wreath as before, lower—wanting. *Period:* late Flavian. (352 a–c)

26.—Drag. 37. Good ware and glaze. Panel decoration: (i) double vertical panel, upper compartment—dog r. (D. 910—GERMANVS), lower—cruciform ornament; (ii) double vertical panel, upper compartment—erotic scene and small male figure l. (*cf.* D. 577), lower—wanting; (iii) double vertical panel, mostly wanting, ? – (i). *Period:* late Flavian. (353)

27.—Drag. 37. Good ware and glaze. Probably panel decoration. Pan r. (*cf.* D. 424) on altar (D. 1089—S. IVLIVS PRIMVS). *Period:* late Flavian. (354)

28.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—part of Diana and hind group; (ii) triple vertical panel, upper compartment—dog r. (K., 1919, Pl. 33, 1—FRONTINVS) over grass tuft, middle—"pinnate leaves" and oblique zigzags, lower—festoon containing bird r. (D. 1031—VOLVS); (iii) male figure l. (D. 510), over grass tufts; (iv) ? triple vertical panel as (ii). Below, straight wreath, indeterminate (but ? as 17 above). *Period:* late Flavian. (355)

29.—Drag. 37. Good ware and glaze. Transitional decora-

tion. Upper frieze : hare r. (D. 942) and palmette (*cf.* D. 1151). Lower frieze : festoons containing scrolls with rosette terminals. *Period :* Domitian–Trajan. (356)

30.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : animals and shrubs : (i) palmette (*cf.* D. 1151) ; (ii) dog l. (D. 928) over grass tufts ; (iii) = (i). Lower frieze : festoon pattern (*cf.* K. 1919, Pl. 84, 9—VITALIS) : alternate pairs of festoons containing tendrils and birds l. and r. (D. 1036—LIBERTVS, and D. 1009—BANVVS, PATERNVS, respectively). Below : straight wreath (cf. *B.M.C.*, Pl. XXXIV, 28, and 17 above). *Period :* Domitian–Trajan. (357 a–c)

31.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : festoon pattern (cf. *B.M.C.*, Pl. XXXVIII, 4). *Period :* Domitian–Trajan. (358)

32.—Drag. 37. Good ware and glaze. Probably transitional decoration. Lower frieze : festoons containing tendrils with rosette terminals. Defective mould. *Period :* Domitian–Trajan. (359)

33.—Drag. 37. Good (thick) ware and glaze. Transitional decoration. Lower frieze : festoons containing tendrils with rosette terminals. *Period :* Domitian–Trajan. (360)

Fig. 37.

34.—Drag. 37. Good ware and glaze. ? Large tendril pattern as middle zone in transitional decoration (*cf.* K., 1919, Pl. 23, A) : upper spaces—leaf (K., 1919, Pl. 23, 6—COELVS), and tendril ending in spiral ornament, lower—divided horizontally, upper compartment—bird r. (D. 1031—VOLVS), lower—hare l. (K., 1919, Pl. 67, 9—PVDENS). Below : straight wreath (cf. *B.M.C.*, Pl. XXXIII, 10). *Period :* Domitian–Trajan. (361)

35.—Drag. 37. Good ware and glaze. Large tendril pattern (*cf.* K., 1919, Pl. 99, C). Upper space : two leaves and tendrils, with bird r. (D. 1017) in field ; lower (mostly wanting) —animal (? boar) r., over grass tufts. *Period :* Domitian–Trajan. (362)

36.—Drag. 37. Good ware and glaze. Large tendril pattern (*cf.* K., 1919, Pl. 23, A). Upper space (incomplete) : pointed leaf (K., 1919, Fig. 12—BIRAGIL, etc.), and tendril, with bird r. (D. 1034) in field ; lower (mostly wanting) : divided horizontally, upper compartment—wanting, lower—part of tendril volute (? *cf.* K., 1919, Pl. 25—CORNVTVS). *Period :* Domitian–Trajan. (363)

37.—Drag. 37. Good ware and glaze. Large tendril pattern (*cf.* 35 above). Lower space (incomplete) divided hori-

zontally, upper compartment—gladiator r. (D. 608), lower—dog l. (K., 1919, Pl. 67, 8—PVDENS); upper space—two leaves (D. 1169) and tendrils. *Period:* Domitian–Trajan. (364)

38.—Drag. 37. Good ware and glaze. Part of large tendril pattern with large and small cyclamen leaves (*cf.* D. 1171). *Period:* Domitian–Trajan. (365)

39.—Drag. 37. Good ware and glaze. Animals and shrubs, types indeterminate, with small straight wreath below. Late S. Gaulish. *Period:* Domitian–Trajan. (366)

40.—Drag. 37. Good ware and glaze. Panel (?) containing two stags facing (D. 845 and 862 respectively) over grass tufts. *Period:* Domitian–Trajan. (367)

41.—Drag. 37. Good ware and glaze. Dog r. (D. 913) enclosed between shrubs with vine terminals. *Period:* Domitian–Trajan. (368)

42.—Drag. 37. Good ware and glaze. Animals and shrubs: (i) ? stag, mostly wanting, r.; (ii) shrub (*cf.* D. 1136) with bird l. above; (iii) animal, type indeterminate, r. *Period:* Domitian–Trajan. (369 a–b)

Fig. 38.

43.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze: lion r. (*cf.* D. 747), with vine shrub behind, and bull l. (D. 898) with grass tufts below; lower frieze—festoon pattern, mostly wanting. *Period:* Domitian–Trajan. (370)

44.—Drag. 37. Good ware and glaze. ? Panel decoration, or frieze of transitional bowl: sagittarius r. (variant of D. 169) with conventionalized plant-forms as K., 1919, Fig. 7—COTTO. *Period:* Domitian–Trajan. (371)

45.—Drag. 37. Good ware and glaze. Fragment with boar l. (D. 837) and part of shrub. *Period:* Domitian–Trajan. (372)

46.—Drag. 37. Good ware and glaze. ? Upper frieze of transitional decoration: straight wreath (*B.M.C.*, Pl. XXXIII, 2). *Period:* Domitian–Trajan. (373)

47.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze: ? part of shrub (*cf.* D. 1126); lower frieze: festoons with tendrils ending in rosette terminals (*cf.* *B.M.C.*, Pl. XXXVIII, 7). *Period:* Domitian–Trajan. (374)

48.—Drag. 37. Good ware and glaze. Part of a panel containing gladiator r. (*cf.* D. 592). *Period:* Domitian–Trajan. (375)

49.—Drag. 37. Good ware and glaze. Warrior l., incomplete (D. 118). *Period:* Domitian–Trajan. (376)

50.—Drag. 37. Good ware and glaze. Panel decoration. (i) triple vertical panel, upper compartment—animal subject, mostly wanting, middle—straight wreath (*cf. B.M.C.*, Pl. XXXIV, 28), lower—dog pursuing stag (D. 859—MERCATOR) r.; (ii) double vertical panel, upper compartment—mostly wanting, lower—line of spiral ornament. *Period:* Domitian–Trajan. (377 a–c)

51.—Drag. 37. Good ware and glaze. Panel decoration: (i) Venus r. (D. 83); (ii) double vertical panel, upper compartment—bird l. (D. 1033—VOLVS), lower—? male figure front; (iii) male and female figures in embrace (?); (iv) double vertical panel, upper compartment mostly wanting, lower—male figure r. (*cf.* D. 101). ? And repeat. *Period:* Domitian–Trajan. (378)

52.—Drag. 37. Good ware and glaze. Panel decoration: (i) double vertical panel, upper compartment (incomplete)—shrub (*cf.* K., 1919, Pl. 54, 16), and stag r. (D. 859—MERCATOR) over grass tuft; (ii) mostly wanting—part of cruciform pattern (*cf.* K., 1919, Pl. 17). *Period:* Domitian–Trajan. (379)

53.—Drag. 37. Good ware and glaze. Panel with part of cruciform ornament (cf. *B.M.C.*, Pl. XL, 6). *Period:* Domitian–Trajan. (380)

54.—Drag. 37. Good ware and glaze. Panel decoration: (i) double vertical panel, upper compartment—lion r. (D. 747—FLORVS) over grass tufts, lower (mostly wanting)—festoon containing interlaced fish (D. 1061); (ii) arcade supported on columns containing Hercules slaying the hydra (D. 408—MERCATO) with grass tufts below; (iii) double vertical panel, upper compartment—? dog (incomplete) and stag r. (D. 859—MERCATOR—*cf.* 52 above) over grass tufts, lower—as in (i). *Period:* Domitian–Trajan. (381 a–c)

55.—Drag. 37. Good ware and glaze. Part of panel with cruciform ornament (*cf.* O. & P., Pl. IX, 8). *Period:* Domitian–Trajan. (382)

Fig. 39.

56.—Drag. 37. Good ware and glaze. Panel decoration: (i) incomplete—Pan r. (D. 416); (ii) double vertical panel, mostly wanting. *Period:* Domitian–Trajan. (383)

57.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—? part of large medallion; (ii) double vertical panel, upper compartment—quadriga r. (D. 647 reversed), lower—stag l. (variant of D. 875); (iii) Jupiter r. (D. 6); (iv) double vertical panel, upper compartment (incomplete)—quadriga l. (D. 647), lower (mostly wanting)—

stag l. (? D. 862). *Period:* Domitian–Trajan. (384 a–b)

58.—Drag. 37. Good ware and glaze. Panel decoration: (i) double vertical panel, upper compartment—lion r. (? D. 749), lower—wanting; (ii) ? part of human figure r., mostly wanting. *Period:* Domitian–Trajan. (385)

59.—Drag. 37. Good ware, fairly good glaze. Arcading (*cf. B.M.C.*, M. 557) with hanging tendrils: (i) part of human figure, of indeterminate type, over grass tuft; (ii) Silenus r. (D. 323) over grass tuft; (iii) Silenus r. with double pipes (D. 310). Below: straight wreath (*cf. B.M.C.*, Pl. XXXIII, 13). *Period:* Domitian–Trajan. (386)

60.—Drag. 37. Good ware and glaze. Panel decoration: (i) part of cruciform ornament with "pinnate leaves" in upper and lower divisions; (ii) gladiators confronted (D. 607 and ? variant of D. 608); (iii) = (i). Below: band of straight godroons. *Period:* Domitian–Trajan. (387)

61.—Drag. 37. Good ware and glaze. Panel decoration: triple panel (incomplete): above, lion r. (D. 747—FLORVS), and bestiarius l. (D. 634), below, on left, panel containing cruciform ornament (*cf.* O. & P., Pl. IX, 8), on right—? dog, incomplete, l. *Period:* Domitian–Trajan. (388)

62.—Drag. 37. Good ware and glaze. Panel decoration: a double vertical panel, upper compartment containing dog l. incomplete (K., 1919, Pl. 16, 5—BIRAGIL) over grass tuft, lower a figure-subject, mostly wanting. *Period:* Domitian–Trajan. (389)

63.—Drag. 37. Good ware and glaze. Panel decoration: (i) bestiarius l. (D. 634); (ii) double vertical panel, incomplete, upper compartment—hare l. (K., 1919, 67, 9—PVDENS) over grass tufts, lower—conventional double tendril ornament with bird r. (D. 1017) in field. *Period:* Domitian Trajan. (390)

64.—Drag. 37. Good ware, fairly good glaze. Panel decoration: (i) double vertical panel, upper compartment mostly wanting, lower (incomplete)—conventional double tendril ornament, as 63 above, with bird l. (D. 1017 reversed) in field; (ii) triple panel as 61, etc., upper compartment (mostly wanting)—lion r. (D. 747—FLORVS), lower left—stag r. (D. 850), lower right—grass tufts. *Period:* Domitian–Trajan. This fragment may be part of the same bowl as 63. (391)

65.—Drag. 37. Good ware and glaze. Panel decoration: (i) hare, mostly wanting, r. (*cf.* D. 942); (ii) mostly wanting—Diana and hind group. *Period:* Domitian–Trajan. (392)

66.—Drag. 37. Fairly good ware and glaze. Panel decoration: probably part of triple panel, as 61, etc., with bestiarius l. (*cf.* D. 634 and 61, etc., above). *Period:* Domitian–Trajan. (393 a–b)

Fig. 40.

67.—Knorr 78. Good ware, fairly good glaze. Animals and shrubs: (i) shrub (variant of D. 1136) with bird l. (D. 1032—VOLVS); (ii) stag r. (D. 845); (iii) = (i) with bird r.; (iv) stag l. (D. 862). And series repeated. *Period:* Domitian–Trajan. (394 a–h)

68.—Drag. 37. Good ware and glaze. Arcade incomplete, containing Silenus r. (D. 323). *Period:* Domitian–Trajan. (395)

69.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—cruciform pattern (*cf. B.M.C.*, Pl. XL, 2); (ii) biga l., incomplete. *Period:* Domitian–Trajan. (396)

70.—Drag. 37. Good ware and glaze. Panel decoration: (i) corner tendrils with "wheat-ear" terminals enclosing medallion, mostly wanting; (ii) triple vertical panel, upper compartment—dog (K., 1919, Pl. 28, 23) pursuing hare (*ibid.*, Pl. 28, 3), r., middle divided horizontally, three compartments containing "pinnate leaves" set alternately vertically and horizontally, lower—animal, indeterminate, l.; (iii) = (i) with medallion, containing two dogs r. (*ibid.*, Pl. 28, 2), and between them the stamp MA(?)CRESTIO in raised letters; (iv) mostly wanting = (ii); (v) = (i) with medallion containing two stags r. (*ibid.*, Pl. 22—CENSOR); (vi) = (ii) with winged animal r., as K., 1919, Pl. 28, 19, in lower compartment; (vii) = (i) but with two hares (as iv, upper compartment) in medallion; (viii) (mostly wanting) probably = (ii) but with indeterminate animals in lower compartment. *Period:* Domitian–Trajan.

A fault in the stamp makes it uncertain whether it should be read MA or M.[1] The potter using this and similar stamps appears to have worked at La Graufesenque, and is placed by K. (1919, p. 6—see also Pl. 28) in the Flavian period. O. & P. (p. 58) assign the above bowl to the Domitian–Trajan period. His stamps occur on Drag. 29 at a number of early sites. At Wroxeter he occurs on 18 and 27 "in deposits dated about 80–120 A.D." (1913 report, pp. 29 and 34). (397 a–k)

71.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—cruciform pattern. Below: straight wreath (*cf. B.M.C.*, Pl. XXXIV, 23). *Period:* Domitian–Trajan. (398 a–b)

72.—Drag. 37. Good ware and glaze. Panel decoration: Panel containing dog (?) incomplete, r. with three wheat-ear ornaments in field. Below: straight wreath (indeterminate). *Period:* Domitian–Trajan. (399)

[1] Dr. Felix Oswald informs me that the stamp of this potter is M, not MA ligatured.

73.—(Two fragments, probably part of the same bowl). Drag. 37. Fairly good ware and glaze. Panel decoration: (*a*) (i) cruciform ornament (*cf. B.M.C.*, Pl. XL, 3); (ii) double vertical panel, upper compartment—Diana with small hind, lower compartment—bird l. (*cf.* D. 1033—VOLVS); (iii) Silenus l. (D. 324) over grass tuft. (*b*) (i) cruciform ornament (incomplete), as before; (ii) double vertical panel, upper compartment (incomplete)—Diana and small hind, lower—bird r. (D. 1017); (iii) cruciform ornament, as before. Below: straight wreath (*cf. B.M.C.*, Pl. XXXIII, 16). *Period:* Domitian–Trajan. (400)

74.—Drag. 37. Good ware and glaze. Part of cruciform ornament. *Period:* Domitian–Trajan. (401)

75.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze: alternate animals and palmettes (*cf.* D. 1151): a series composed of a bitch r. (D. 916 *bis*—MALCIO) and hare r. (D. 942) with palmettes, repeated three times. Lower frieze: band of S-shaped godroons. *Period:* Domitian–Trajan. (402 a–h)

76.—Drag. 37. Good ware and glaze. Animals and shrubs. A series composed of dog r. (K., 1919, Pl. 57, 6—MERCATO) and hare r. (*cf.* K., 1919, Pl. 41, 43) over grass tufts, with shrubs with spiral terminals, repeated three times with minor variations. *Period:* Domitian–Trajan. (403 a–j)

77.—Drag. 37. Good ware and glaze. Part of panel containing gladiators r. (D. 607, r. and ? 593 respectively). *Period:* Domitian–Trajan. (404)

78.—Drag. 37. Good ware and glaze. Panel decoration: (i) double vertical panel (incomplete), upper compartment—? rabbit r., lower—festoon; (ii) Diana with small hind (as 73 above). *Period:* Domitian–Trajan. (405)

79.—Drag. 37. Good ware, fairly good glaze, rather worn. Panel decoration: (i) cruciform pattern, ? as (iii); (ii) double vertical panel, upper compartment incomplete—animal (indeterminate) r. with large rosette below, lower—"pinnate leaves" and oblique zigzags; (iii) cruciform ornament (*cf. B.M.C.*, Pl. XL, 8, and 74 above); (iv) = (ii), double vertical panel, with animal in upper compartment (mostly wanting) and "pinnate leaves" and oblique zigzags in lower. *Period:* Domitian–Trajan. (406 a–c)

Fig. 41.

80.—Drag. 37. Good ware and glaze. Panel decoration: (i) festoon containing bird r., mostly wanting (*cf.* D. 1027); (ii) medallion (incomplete) containing Cupid r. (*cf.* D. 243), with corner-tendrils having leaf-terminals. Below: band of S-shaped godroons. *Period:* Domitian–Trajan. (407)

81.—Drag. 37. Good ware and glaze. Panel decoration : (i) ? triple vertical panel (mostly wanting) ; (ii) Victory l. (D. 481) ; (iii) Cupid r. (D. 268). *Period :* Domitian–Trajan. (408)

82.—Drag. 37. Good ware and glaze. Panel decoration : lion r. (D. 747—FLORVS) and bestiarius l. (? D. 634). *Period :* Domitian–Trajan. (409)

83.—Drag. 37. Good ware and glaze. Style indeterminate. Two gladiators, incomplete (*cf.* D. 583). Defective mould. *Period :* Domitian–Trajan. (410)

84.—Drag. 37. Good ware and glaze. Panel containing Victory l. (D. 481, and 81 above). *Period :* Domitian–Trajan. (411)

85.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting—medallion containing part of ? Cupid r., with corner tendrils ending in leaf terminals ; (ii) simple cruciform pattern, as *B.M.C.*, Pl. XL, 7. Below : band of S-shaped godroons. *Period :* Domitian–Trajan. (412)

86.—Drag. 37. Good ware, thin rather worn glaze. Arcading, with tendrils with wheat-ear terminals. (i) male figure front, incomplete (D. 89—LIBERTVS) ; (ii) mostly wanting. *Period :* Domitian–Trajan. (413)

87.—Drag. 37. Good ware and glaze. A winding scroll with arcaded borders, the upper spaces being divided by transverse straight wreaths. (i) Apollo (D. 55) on festooned quadrangular pedestal, ? leaning on tripod ornament ; (ii) divided horizontally by straight wreath (*B.M.C.*, Pl. XXXIV, 34), upper compartment—detached ram's horns, lower—tendril with cuneiform leaf and stipule ; (iii) Diana and hind (D. 63, and *cf. Brecon Gaer*, Fig. 86, 2) on pedestal as before ; ? (iv) = (ii) but with different straight wreath ; (v) Neptune r. (D. 14) on trellised ornament (as in D. 570) lying horizontally ; (vi) vertical ram's horn wreath between trellised ornaments as before, supporting adjacent arcades (*i.e.* v and vii) ; (vii) winged female figure l. holding garland (? Victory—*cf.* D. 481), on trellised ornament, ? and repeat with minor variations. Below : ram's horn wreath. *Period :* Domitian–Trajan. (414 a–i)

Fig. 42.

88.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : mostly wanting—part of medallion or festoon. Below : small straight wreath (*cf. B.M.C.*, Pl. XXXIV, 26). Lower frieze : festoon pattern, festoon containing pairs (?) of vine leaves. Below : straight wreath as *B.M.C.*, Pl. XXXIV, 34. *Period : Trajan*–Hadrian. (415)

89.—Drag. 37. Good ware and glaze. Probably transi-

tional decoration. Row of large rosettes (as used by IŒNALIS, etc.), with festoons containing smaller festoons and rosettes (as before) below, having tongue with trident-shaped terminal (as used in first panel of *Brecon Gaer*, S97, Fig. 74). *Period : Trajan*–Hadrian. (416)

90.—Drag. 37. Good ware, fair glaze. Small tendril ending in rosettes (*cf. B.M.C.*, M1131) with ram's horn straight wreath (*Brecon Gaer*, S97) below. *Period : Trajan*–Hadrian. (417 a–d)

91.—Drag. 37. Good ware and glaze. Part of large tendril pattern enclosing pairs of small vine-leaves, with small six-petalled rosettes in field. *Period : Trajan*-Hadrian. (418)

92.—Drag. 37. Good ware and glaze. Panel decoration : (i) incomplete—? part of festoon ; (ii) small Pan r. (*cf.* D. 419 for type), over two anchor ornaments (*B.M.C.*, M1132) ; (iii) cruciform ornament, incomplete. Below : part of ram's horn straight wreath. *Period : Trajan*–Hadrian. (419)

93.—Drag. 37. Good ware and glaze. Panel decoration : male figure (mostly wanting) r. (*cf.* D. 445, etc.) with small rosettes in field. *Period : Trajan*–Hadrian. (420)

94.—Drag. 37. Good ware and glaze. Panel decoration : mask front (D. 673). *Period : Trajan*–Hadrian. (421)

95.—Drag. 37. Good ware and glaze. Panel decoration : (i) ? double vertical panel, upper compartment (incomplete)—four rings, lower—cruciform ornament ; (ii) ? double vertical panel, upper compartment—mostly wanting, lower—dog l. (*cf.* D. 934). *Period : Trajan*–Hadrian. (422)

96.—Drag. 37. Good ware and glaze. Fragment of rim with scrolls (as *Brecon Gaer*, S197) replacing ovolo. *Period : Trajan*–Hadrian. (423)

97.—Drag. 37. Good ware and glaze. Panel decoration : sea-monster l. (*cf.* D. 29). *Period : Trajan*–Hadrian. (424)

98.—Drag. 37. Good ware and glaze. Panel decoration, with part of base : (i) double vertical panel, upper compartment mostly wanting, lower—fleur-de-lis (*cf.* D. 1164) ; (ii) double vertical panel, upper compartment—medallion (incomplete) containing bird l., lower—Siren (D. 500) ; (iii) mostly wanting. Below : part of potter's stamp in raised letters : SVVS. *Period : Trajan*–Hadrian. (425)

99.—Drag. 37. Fairly good ware and glaze. Panel decoration : (i) probably = (iii) ; (ii) double vertical panel, upper compartment—two cupids r. (D. 231 and 234) with large and small rosettes, and detached anchor ornaments in field, lower—small straight wreath (*cf. B.M.C.*, Pl. XXXIII, 3) ; (iii) large floral festoon containing gladiators r. and l. (*cf. Brecon Gaer*, S94) with large and small rosettes in field, with three acanthus

leaves set cruciform fashion below. The same subjects are used on *Brecon Gaer*, S94 (Fig. 74) which is dated to the Trajanic period. *Period : Trajan*–Hadrian. (426)

100.—Drag. 37. Good ware and glaze. Panel decoration : a double vertical panel, upper compartment—capricorns confronted (*cf. B.M.C.*, M50) with small medallion containing trifid leaf between, lower—fine bead rows set obliquely, and ? " pinnate leaves ". *Period : Trajan*–Hadrian. (427 a–b)

101.—Drag. 37. Good ware and glaze. Part of ram's horn straight wreath. *Period : Trajan*–Hadrian. (428)

Fig. 43.

102.—Drag. 37. Good ware and glaze. Panel decoration : (i) pygmy (incomplete) supporting mask (?) ; (ii) double vertical panel, upper compartment—sphinx r. (D. 496), lower—festoon containing animal (indeterminate) r. ; (iii) female figure (? dancer—*cf.* D. 219) on festooned quadrangular pedestal. *Period : Trajan*–Hadrian. (429 a–b)

103.—Drag. 37. Good ware and glaze. Part of male figure r. (*cf.* D. 90). *Period : Trajan*–Hadrian. (430)

104.—Drag. 37. Good ware and glaze. Alternate figures and shrubs. A series composed of bestiarius r. (D. 117), bear l. (D. 815), and another animal (mostly wanting) r., with a shrub (*cf.* D. 1134) between each, and detached leaves in field, repeated twice (?). Below : ram's-horn straight wreath. *Period : Trajan*–Hadrian. (431 a–l)

105.—Drag. 37. Good ware and glaze. Panel decoration : (*a*) (i) foliated cruciform pattern of acanthus leaves ; (ii) male figure front (D. 102) ; (iii) incomplete—gladiator r. (D. 582 a) with large and small rosettes in field. (*b*) Neptune r. (D. 14) and male figure l. (D. 378) with large rosette in field between. (*c*) Not illustrated. Panels containing (i) foliated cruciform pattern as before ; (ii) male figure, mostly wanting, over large rosettes. Below : ram's-horn wreath, as *Brecon Gaer*, S97. *Period : Trajan*–Hadrian. (432 a–c)

Fig. 44.

106.—Drag. 37. Good ware and glaze. Panel decoration : (i) draped female figure, r. ; (ii) " pinnate leaves " and oblique zigzags ; (iii) draped female figure, l. ; (iv) cruciform ornament of simple type ; (v) = (i), and whole series repeated three times, with straight wreath below. Central Gaulish ware, with South Gaulish elements in the decoration. *Period : Trajan*–Hadrian.

The figure-subjects are carried out in applied, as distinct from moulded technique—a method which appears to have

been employed, tentatively at least, in the South Gaulish potteries towards the close of the first century. In Central Gaul its use was further developed, especially in cases where moulded decoration was not practicable, and it is found occasionally on Drag. 37 bowls to give higher relief to the ornament. Applied technique is rare in Britain. (See O. & P., pp. 230–1.) (433 a–o)

107.—Drag. 37. Good ware and glaze. Panel decoration : (i) double vertical panel, incomplete ( = (iii) etc.), upper compartment—two small columns supporting festoon containing tendril volute, lower—cupid r. (D. 247) and goat r. (D. 889—ATTIVS, CINNAMVS) ; (ii) male figure l. carrying goblet and palm (*cf.* Ludowici, M187—MAMMILIANVS) ; (iii) = (i) ; (iv) Apollo with harp seated r. (D. 52—CINNAMVS, PATERNVS); (v) cruciform ornament ; (vi) = (ii) ; (vii) = (v) ; (viii) = (iv). And series repeated, with small straight wreath below. Central or early East Gaulish. *Period :* *Trajan*–Hadrian. (434 a–i)

108.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting—? part of inverted festoon (*cf.* Ludowici, B. 28) ; (ii) cupid l., incomplete (D. 251—DŒCCVS) over raised stamp IANV[S or F]. *Period :* *Trajan*–Hadrian.

IANVS : of La Madeleine, Heiligenberg, and Rheinzabern. Recorded also at Rottweil, Rottenburg and Cannstatt, and at London, Corbridge, etc., in this country. His greatest output may be assigned to the Trajan–Hadrian period, but his activity probably continued into Antonine times (see O. & P., pp. 60, etc.). (435)

109.—Drag. 37. Good ware and glaze. Panel decoration : (i) cruciform pattern (*cf.* O. & P., Pl. X, 6) with lateral leaves as Ludowici, II, P. 8 ; (ii) double vertical panel, upper compartment—corner tendrils with double spiral terminals enclosing festoon containing dolphin l. (D. 1051), lower—dog l. (D. 934—CINNAMVS, PATERNVS) ; (iii) = (i) ; (iv) = (ii) but with dolphin r. (D. 1050—CINNAMVS, etc.). And repeat, with minor variations. Central Gaulish. *Period :* Trajan–Hadrian. (436 a–j)

110.—Drag. 37. Good ware and glaze. Probably panel decoration. Above : ? small medallion, mostly wanting. Below : (i) " free style "—heron r. (*cf.* Ludowici, II, T148, 149), hare r. (D. 950 reversed), and sphinx r. (D. 496 ); (ii) double vertical panel, upper compartment (incomplete)—? stag r. (*cf.* D. 847), lower—double palmette ornament. *Period :* Trajan–Hadrian. (437)

111.—Drag. 37. Good ware and glaze. Small straight wreath (*cf.* *B.M.C.*, Pl. XXXIII, 16—MEDDILLVS) in place

of ovolo. Panel decoration : (i) double vertical panel, upper compartment—two small medallions containing leaf (*cf.* K., 1919, Fig. 10—CENSOR) and rosette respectively, lower (incomplete)—? cupid l. (*cf.* D. 255 *bis*) ; (ii) mostly wanting. *Period :* Trajan–Hadrian. (438)

112.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting ; (ii) male figure front (D. 337—BVTRIO, LIBERTVS) on pedestal ; (iii) double vertical panel, upper compartment—Diana front in biga (*cf.* D. 73) with rings in field, lower—double fleur-de-lis ornament, mostly wanting ; (iv) mostly wanting—part of small human figure, front. *Period :* Trajan–Hadrian. (439)

113.—Drag. 37. Good ware and glaze. Fragment with pygmy l. (*cf.* D. 439) and boar r. (*cf.* D. 826, etc.) ; style of decoration indeterminate. *Period :* Trajan–Hadrian. (440)

114.—Drag. 37. Good ware and glaze. Panel decoration : (i) arcade supported by candelabra (D. 1096) containing Mercury front (D. 290 *a*) ; (ii) baluster ornament (D. 1092). *Period :* Trajan–Hadrian. (441)

Fig. 45.

115.—Drag. 37. Good ware and glaze. No ovolo moulding. Panel decoration : (i) mostly wanting—bestiarius r. confronting lion l. (D. 624—MAMMILIVS), as (iv), with large and small rosettes in field ; (ii) Neptune r. (D. 14—ALBVCIVS, CINNAMVS) and Mercury front (*cf.* D. 290 *a*) with rosettes as before in field ; (iii) triple vertical panel, upper compartment—festoon containing lion's head l. (*cf.* D. 781), middle—four rings, lower—cupid (D. 255—LIBERTVS, etc.) ; (iv) = (i) and remainder of series repeated three or four times. Almost certainly Central Gaulish. *Period :* Trajan–Hadrian. (442 a–w)

116.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting—part of medallion with small rosette in spandrel ; (ii) Silenus r. (D. 312). *Period :* Trajan–Hadrian. (443)

117.—Drag. 37. Fair ware, good glaze. Combined panel decoration and " free style " : gladiators facing (D. 582 and 583—PATERNVS) with two small figures (? D. 199, but smaller) on rings in field. *Period :* Trajan–Hadrian. (444)

118.—Drag. 37. Good ware and glaze. Part of tripod ornament (*cf.* D. 1069—CINNAMVS, etc.). *Period :* Trajan–Hadrian (probably late). (445)

119.—Drag. 37. Good ware and glaze. Panel decoration : (i) medallion containing cupid r. (D. 240) and female figure, incomplete, l. (*cf.* D. 214) with bird l. (D. 1042) in field below ;

(ii) narrow vertical panel containing five rings; (iii) double vertical panel, upper compartment—festoon containing cupid r. as before, with two rings in field, lower—simple cruciform ornament; (iv) = (ii); (v) = (i). *Period:* Trajan–Hadrian. (446 a–m)

120.—Drag. 37. Good ware and glaze. Style of decoration indeterminate; Silenus r. (D. 322—DIVIXTVS) with small rosette with six pointed petals, in field. *Period:* Trajan–Hadrian. (447)

Fig. 46.

121.—Drag. 37. Good ware and glaze. Large tendril pattern enclosing large vine leaves and tendrils with double spiral terminals, with detached rings in the field, and in the corners of the lower spaces, goats r. (D. 889—CINNAMVS) and birds r. and l. (D. 1018—CINNAMVS, DOECCVS, DRVSVS, LIBERTVS). On the plain zone below the decoration the potter's stamp OF ATT (*retro*) – ATTIVS. *Period:* Trajan-Hadrian.

ATTIVS: a Lezoux potter of the Trajan–Hadrian period. The motifs on the present bowl are characteristic of many bowls bearing this stamp. It occurs on Drag. 37 with "free style" decoration at Segontium (Wheeler, *Segontium*, p. 149). (448)

122.—Drag. 37. Good ware and glaze. Panel decoration: (i) incomplete—Perseus front (D. 146—CALETIVS, CINNAMVS, etc.); (ii) mostly wanting—part of festoon. *Period:* Trajan–Hadrian. (449)

123.—Drag. 37. Good ware and glaze. Panel decoration: (i) mostly wanting—part of festoon; (ii) pedestal ornament, incomplete; (iii) mostly wanting. *Period:* Trajan Hadrian. (450 a–b)

124.—Drag. 30. Fairly good (thick) ware, good glaze. Panel decoration: (i) large rosette containing smaller rosette with pointed petals; (ii) caduceus ornament (? D. 1113 *a* CINNAMVS, DOECCVS); (iii) rectangular ornament with small central rosette (*cf. Brecon Gaer*, S123). *Period:* Trajan–Hadrian. (451)

125.—Drag. 37. Good ware and glaze. Panel decoration: ? part of large festoon depending from acanthus leaf, and enclosing bird r. (incomplete, but *cf.* D. 1015); ? caryatid (D. 656) in spandrel below. *Period:* Trajan–Hadrian. (452)

126.—Drag. 37. Good ware and glaze. ? Large tendril pattern: (i) upper space (incomplete)—pointed leaf with birds l. and r. (*cf.* D. 1042, and D. 1019—CINNAMVS, etc., respectively); (ii) lower space divided horizontally, upper

compartment—? dog l. (*cf.* D. 969 *ter*) lower—panther r. (D. 799); (iii) upper space (mostly wanting)—cyclamen leaf with bird l. (*cf.* D. 1036) in field. *Period :* Trajan–Hadrian. (453)

Fig. 47.

127.—Drag. 37. Good ware and glaze. Figure-subjects separated by vines (*cf.* D. 1124). In partitions : (i) female dancer r. (D. 216—ADVOCISVS, etc.), with bird l. (D. 1042) in field above ; (ii) mostly wanting—bird as before. *Period :* Trajan–Hadrian. (454)

128.—Drag. 37. Good ware and glaze. ? Lower space of large tendril pattern, divided horizontally, the upper compartment mostly wanting, lower—panther r. (D. 799). *Cf.* 126 above. This fragment may well be part of the same bowl. *Period :* Trajan–Hadrian. (455)

129.—Drag. 37. Good ware and glaze. Panel decoration : (i) mostly wanting—draped female figure r. (*cf.* D. 541—LIBERTVS) ; (ii) mostly wanting—scrolls (*cf. B.M.C.*, Fig. 194). *Period :* Trajan–Hadrian. (456)

130.—Drag. 37. Good ware and glaze. Panel decoration : (i) " free style " (incomplete)—stag l. (D. 867), bear l. (D. 820) ; (ii) large festoon containing panther r. (D. 797) ; (iii) " free style "—? lioness l. (*cf. B.M.C.*, M1031), remainder wanting. Other fragments : stag l., bear l., as before ; lioness r. (? D. 790) and trace of festoon as (ii). *Period :* Trajan–Hadrian. (457)

131.—Drag. 37. Good ware and glaze. Male figure l. (D. 136) with small rosette in field. *Period :* Trajan–Hadrian. (458)

132.—Drag. 37. Good ware and glaze. Panel decoration : cruciform ornament, incomplete. *Period :* Trajan–Hadrian. (459)

133.—Drag. 37. Good ware and glaze. Part of small human figure front (*cf.* D. 673). *Period :* Trajan–Hadrian. (460)

134.—Drag. 37. Fair ware and glaze. Row of concentric circles with part of cupid or centaur (?) l. below. *Period :* Trajan–Hadrian. (461)

135.—Drag. 37. Good ware and glaze. Transitional decoration. Upper frieze : small tendril pattern, as *B.M.C.*, M1135. Lower frieze : divided into panels by floral ornaments, a so as *B.M.C.*, 1135, to which this bowl is a close parallel. S bjects : ? lion r. (D. 750) and dog l. (? D. 935—AVSTRVS), over foliated tendrils (*Brecon Gaer*, S115), remainder indeterminate. *Period :* Trajan–Hadrian. (462 a–b)

136.—Drag. 37. Good ware and glaze. Panel decoration.

Upper compartment of double vertical panel—sea-stag r. (*cf.* D. 37, etc.). *Period :* Trajan–Hadrian. (463 a–b)

Fig. 48.

137.—Drag. 37. Good ware and glaze. Medallions and panels : (i) medallion containing lion's head r. (? D. 740—COCIVS, ILLIXO) ; (ii) Minerva front (D. 77—ADVOCISVS, etc.) ; (iii) double vertical panel, upper compartment—medallion containing lion's head l. (? D. 755), lower—wanting ; (iv) mostly wanting—Hercules front (D. 469). *Period :* Trajan–Hadrian. (464 a–b)

138.—Drag. 37. Good ware and glaze. Part of large tendril pattern : birds l. and r. in upper spaces (incomplete ; *cf.* 126 above), lower space—stag l. (*cf.* D. 874). Detached leaf-ornaments in field. *Period :* Trajan–Hadrian. (465 a–b)

139.—Drag. 37. Good ware and glaze. Stag l. (D. 874) with detached leaf-ornaments in field. *Cf.* 138 above—perhaps part of same bowl. *Period :* Trajan–Hadrian. (466)

140.—Drag. 37. Good ware and glaze. Combined panel decoration and free style : (i) mostly wanting indeterminate animals l. ; (ii) tripod ornament (D. 1069, 1069 *a*—CINNAMVS, DOECCVS, SERVVS) ; (iii) mostly wanting—stag l., incomplete (*cf.* D. 874). *Period : Hadrian*–Antonine. (467)

141.—Drag. 30. Good ware and glaze. Panel decoration : (i) large cruciform pattern (mostly wanting) ; (ii) double vertical panel, upper compartment—male figure r. (D. 403—CINNAMVS, etc.), lower—mostly wanting. *Period : Hadrian*–Antonine. (468)

142.—Drag. 37. Good ware and glaze. Panel decoration : (i) incomplete—part of palmette (*cf.* D. 1151), dog l. (*cf.* D. 934) with foliated ornament in field above ; (ii) dog r. (D. 916) with foliated ornaments as before, above. Below : straight wreath. *Period : Hadrian*–Antonine. (469)

143.—Drag. 37. Good ware and glaze. Panel decoration : dolphin facing (*cf.* D. 1050–1—ADVOCISVS, etc.). *Period Hadrian*–Antonine. (470)

144.—Drag. 37. Good ware and glaze. Free style : horseman r. (? D. 156—CINNAMVS, etc.), and stag r. (D. 852—CINNAMVS, DOCCIVS). *Period : Hadrian*–Antonine. (471)

145.—Drag. 37. Fair ware and glaze. Part of medallion, with bird r. (? D. 1037—CINNAMVS, etc.) and leaf ornaments in field above. *Period :* Hadrian–Antonine. (472)

146.—Drag. 37. Fair ware, good glaze. Style of decoration uncertain. ? Cupid r., incomplete (*cf.* D. 230). *Period* Hadrian–Antonine. (473)

147.—Drag. 37. Poorish ware, fairly good glaze. Panel

decoration, mostly wanting, with indeterminate human figure and ornament, and small straight wreath below. *Period :* Hadrian–Antonine. (474)

148.—Drag. 37. Good ware and glaze. Large festoon containing lioness l. (D. 804—CINNAMVS). *Period :* Hadrian–Antonine. (475)

149.—Drag. 37. Soft ware, poor glaze. Large tendril pattern : upper space—two small leaves (as Ludowici, II, P. 8) enclosing small cable carrying a leaf (?) a double frond (D. 1161—CINNAMVS), and indeterminate object. *Period :* Hadrian–Antonine. (476)

Fig. 49.

150.—Drag. 37. Good ware and glaze. Panel decoration : (i) stag r. (D. 844) ; (ii) foliated tendril, incomplete (Wheeler, *Segontium*, No. 46). *Period :* Trajan–Hadrian. (477)

151.—Drag. 37. Good ware and glaze. Panel decoration a lion l. (D. 766) with astragalus and tendril in field. *Period :* Trajan–Hadrian. (478)

Nos. 150 and 151 show similar characteristics, and may be part of the same bowl.

152.—Drag. 37. Good ware and glaze. Panel decoration : incomplete panel—large festoon containing stag l. (D. 873—ILLIXO) with foliated ornament below. *Period :* Hadrian–Antonine. (479)

153.—Drag. 37. Good ware and glaze. Horseman r. (D. 157—ALBVCIVS, IVLICCVS, LASTVCA, PATERNVS, SABINVS). *Period :* Hadrian–Antonine. (480)

154.—Drag. 37. Soft ware, yellowish glaze. ? Part of large tendril pattern, upper space—leaf (*cf.* Ludowici, II, P. 8 and 149 above) with small rosette in field, lower—dancer r. (D. 216—ADVOCISVS, etc.). *Period :* Hadrian–Antonine (or later). (481 a–b)

155.—Drag. 37. Fairly good ware, poorish glaze. " Free style " : stag or goat (incomplete) l. (*cf.* D. 870), dolphin l. (? D. 1051—ADVOCISVS, etc.), lioness (incomplete) l., and ? goat r. (*cf.* D. 860). *Period :* Hadrian–Antonine. (482)

156.—Drag. 37. Fairly good ware and glaze. Panel decoration : (i) double vertical panel, upper compartment—wanting, lower—double fleur-de-lis (*cf.* D. 1153) with two rings in field ; (ii) mostly wanting—part of pedestal as (iv) ; (iii) double vertical panel, upper compartment (mostly wanting)—? lion l., lower—? stag l. (*cf.* D. 885) with detached leaves in field ; (iv) male figure front (D. 337—BVTRIO, LIBERTVS) supported on pedestal ; (v) mostly wanting—? lion incomplete r., set vertically, and part of small medallion containing pygmy or cupid r. *Period :* Hadrian–Antonine. (483)

157.—Drag. 37. Fairly good ware and glaze. Panel decoration : panel with medallion containing male figure r. (D. 394). *Period :* Hadrian–Antonine. (484)

Fig. 50.

158.—Drag. 37. Fairly good ware and glaze. Large tendril pattern : lower spaces divided horizontally : upper compartment—horseman r. (D. 157—ALBVCIVS, etc.), lower double fleur-de-lis ornament (*cf.* D. 1153) forming horizontal cruciform pattern, with six detached rings in field ; upper spaces—large vine leaf (D. 1168—CINNAMVS, etc.) with tendril ending in spiral terminal and pelta ornament in field. On plain zone below, at juncture of wall and foot-ring, in raised cursive letters the stamp VCISIO, ? – ADVOCISVS. *Period :* Hadrian–Antonine. (485 a–b)

159.—Drag. 37. Fairly good ware and glaze. Panel decoration : (i) incomplete—swimming fish (*cf.* D. 1062—LIBERTVS, PVTRIV) ; (ii) incomplete—swimming fish, as before. *Period :* Hadrian–Antonine. (486)

160.—Drag. 37. Good ware and glaze. Panel decoration : (i) uncertain human figure, possibly a caryatid (*cf.* D. 655, etc.) ; (ii) part of a small medallion containing hare r. (? D. 950 *a* reversed). *Period :* Hadrian–Antonine. (487)

161.—Drag. 37. Good ware and glaze. Panel decoration : (i) incomplete—medallion containing leaf (*cf.* Ludowici, II, P. 20) ; (ii) indeterminate. *Period :* Hadrian–Antonine. (488)

162.—Drag. 37. Good ware and glaze. Panel decoration : (i) triple vertical panel, upper compartment—festoon (incomplete), middle—six rings, lower—dolphin l. (*cf.* D. 1052—DECIMANUS, etc.) ; (ii) ? baluster of arcade. *Period :* Hadrian–Antonine. (489)

163.—Drag. 37. Good ware and glaze. Panel decoration : part of a medallion containing pygmy armed with buckler and sword, r. *Period :* Hadrian–Antonine. (490)

164.—Drag. 37. Fairly good ware and glaze. Part of large tendril pattern with bunches of grapes (*cf.* D. 1124 and 1126). *Period :* Hadrian–Antonine. (491)

165.—Drag. 37. Good ware, fairly good glaze. Panel decoration : (i) Silenus r. (D. 311—PATERNVS, SECVNDINVS) ; (ii) male figure l. (D. 378) ; (iii) arcade supported on double tendril-volutes, containing bird front (D. 987—PATERNVS). Below : band of quatrefoils. Series repeated three times. Central or early East Gaulish. *Period :* Hadrian–Antonine. (492 a–p)

166.—Drag. 37. Good ware and glaze. Panel decoration : (i) incomplete—? part of cruciform ornament ; (ii) part of

caryatid or similar ornament (*cf.* D. 655 and 135 above); (iii) incomplete—cruciform ornament with fleur-de-lis as in 158 above. *Period:* Hadrian–Antonine. (493)

167.—Drag. 37. Good ware and glaze. Part of panel containing small leaf (*cf.* Ludowici, II, P. 25). *Period:* Hadrian–Antonine. (494)

Fig. 51.

168.—Drag. 37. Good ware and glaze. Two fragments, probably of the same bowl. (*a*) Panel decoration: (i) mostly wanting—festoon containing hare l. (D. 950 *a*—CINNAMVS, DOECCVS, etc.); (ii) mostly wanting—small rings. (*b*) Panel decoration: (i) incomplete—? figure-subject l. with small ring in field; (ii) double vertical panel, upper compartment (incomplete)—festoon containing hare r. (? as before, reversed, lower compartment (mostly wanting)—small rings. *Period:* Hadrian–*Antonine.* (495 a–b)

169.—Drag. 37. Good ware, poorish glaze. Three fragments, all probably part of the same bowl. Panel decoration and "free style" combined. (*a*) (i) mostly wanting—probably "free style"; (ii) tripod ornament (*cf. B.M.C.*, M1604); (iii) large festoon containing indeterminate animal r., with large rosette and stag (? D. 874) below.

(*b*) (i) mostly wanting—trace of large festoon as before, with large rosette in field, and uncertain animal l. below; (ii) "free style" (incomplete) composed of lion l. (? D. 767), panther r. (D. 799), lioness r., and dog l. (D. 934).

(*c*) (i) part of tripod ornament, as before; (ii) incomplete—large festoon containing bear l. (D. 817—CINNAMVS), with large rosette, as before, in field below. *Period:* Hadrian–*Antonine.* (496 a–c)

170.—Drag. 37. Good ware, fair glaze. Large tendril pattern with vine leaves (D. 1168—CINNAMVS, etc.) and tendrils in upper and lower spaces. *Period:* Antonine. (497 a–z)

171.—Drag. 37. Fair ware, poor glaze. Large tendril pattern, with vine leaf (*cf. B.M.C.*, M2286) in upper space. *Period:* Antonine. (498)

172.—Drag. 37. Fairly good ware and glaze. Panel decoration: (i) probably double vertical panel, upper compartment—festoon containing panther r. (D. 799), lower—wanting; (ii) Apollo front (D. 54—PVTRIV, CENSORINVS, CINNAMVS); (iii) narrow vertical panel, incomplete, containing four rings; (iv) double vertical panel, upper compartment—festoon containing sea-beast l. (D. 29—CINNAMVS, IVSTVS), lower—wanting. *Period:* Antonine. (499)

173.—Drag. 37. Poor ware and glaze. Apollo seated r. (*cf.*

D. 52—CINNAMVS) with large and small rosettes in field. *Period:* Antonine. (500)

(ii) Plain Ware.

Drag. 15/17 (Fig. 52, 1).

174.—Nine fragments of this type, apparently representing seven different plates. All are of good ware and glaze. Drag. 15/17 does not appear to have been produced after the Flavian period, although variants of Domitian–Trajan date occur. The example illustrated is restored on the lines of May, *Silchester*, Pl. XXXII, 29. (501 a–j)

Drag. 18, 18/31 and 31 (Fig. 52, 2–6).

These forms and their many varieties were far more abundant than any other plain form at Holt, thus witnessing to the popularity and usefulness of the type. The well-marked development which Drag. 18, etc. undergo makes these plates of great value for chronological purposes, and allows single examples to be more closely dated than is possible with most other plain forms. The accompanying summary of the many fragments illustrates the general range of date.

| Flavian, 18 and early 18/31. | Domitian–Trajan, mostly 18/31. | Trajan–Antonine. | | Antonine. | |
|---|---|---|---|---|---|
| | | 31 | Lud. Sb. | 31 | Lud.Sb. |
| | | 17 | 19 | 18 | 12 |
| 85 | 82 | 36 | | 30 | |

The following examples are illustrated:

175.—Drag. 18. Very good ware and glaze. Early Flavian. The internal base, as far as it remains, appears to be flat, but the internal and external offsets at the juncture of wall and base, said to be early features (see O. & P., pp. 181 ff., and Pl. XLV) are absent. (502)

176.—Drag. 18. Good ware and glaze. Incomplete stamp EN (? = PASSENVS or PASSIENVS of the Nero-Flavian period—see O. & P., p. 56 and below, p. 125). The internal base shows a gradual rise towards the centre, and there is a pronounced external offset. *Period:* Early Flavian. (321)

177.—Drag. 18 to 18/31. Good ware and glaze. Stamped LENTISCVS (see stamp, No. 22, p. 123). Probably South Gaulish. *Period:* Flavian. (298 a–d)

178.—Drag. 31. One of many variants, showing a comparatively shallow wall with a decided outward inclination, somewhat on the lines of O. & P., Pl. XLVI, 5. Fairly good ware and glaze, probably Central Gaulish. *Period :* Hadrian–Antonine. (503 a–b)

179.—Ludowici Sb. A deep dish, in which the division between wall and base is only slightly marked on the exterior. The internal offset is a common feature, which lasted into the third century. An East Gaulish product, of which there are a number of examples, some later than the present, at Holt. *Period :* Hadrian–Antonine. (504 a–b)

Drag. 27 (Fig. 52, 7–9).

Three examples are illustrated. The form shows no marked typological development, since details of chronological significance are not constant, and both large and small cups are found side by side in the earlier periods.

180.—Good ware and glaze. Stamped PATRIC (= PATRICIVS of La Graufesenque ; see Stamps, No. 28, p. 124). The slightly moulded lip, the internal groove just below it, and especially the external groove on the foot-ring, are characteristic of early examples. *Period :* Flavian. (304)

181.—Good ware and glaze. Stamped OF FL GE (= FLAVIVS GERMANVS of La Graufesenque and Banassac ; see Stamps, Nos. 11-12 p. 123). The moulding of the rim is more pronounced than on 180. The internal groove is present, while that on the foot-ring appears to be suggested by two incised lines. *Period :* Flavian. (287 a–c)

182.—Good ware and glaze. Stamped IOENALIS F (see Stamps, No. 18, p. 123). *Period : Trajan*–Hadrian. (294)

Drag. 30 (rouletted : Fig. 53, 16).

183.—Small fairly thick-sided cup. Good ware and glaze, probably of early East Gaulish manufacture. *Period :* Trajan–Hadrian. (505 a–b)

Drag. 32 (Fig. 53, 15).

184.—Fragment of rim of dish 11¼ inches in diameter. The type belongs mainly to the latter half of the second and the beginning of the third century, being produced especially in East Gaul. Ware bright orange, glaze thin and uneven. Late second–third century. (506)

Drag. 33 (Fig. 52, 10).

No early example, showing the external convexity of the wall (as *Brecon Gaer*, S14, p. 132) occurs at Holt.

185.—Good ware and glaze. The wall is slightly concave on the exterior ; the internal ledge and external groove at juncture of wall and base are common early features. (507)

Drag. 35 (Fig. 52, 11).

186.—Good ware and glaze. Characteristic *en barbotine* decoration of conventional ivy-leaves. Probably late first century. (508)

Drag. 36 (Fig. 53, 13).

187.—Good ware and glaze, burnt black by exposure to heat. *En barbotine* decoration as before. Late first century. (509 a–b)

Drag. 44 (Fig. 53, 19).

188.—Good ware and glaze. The "bulbous" profile resembles that of a larger example from Newstead (*Newstead*, Pl. XL, 20, and p. 200). Although the type is characteristic of the second half of the second century, O. & P. (p. 203) place the Holt cup in the Trajan–Hadrian period. (510)

Drag. 45 (Fig. 53, 18).

189.—Fairly good orange ware, with somewhat thin glaze. A number of fragments, probably all of the same vessel. The interior is thickly covered with quartz. *Period:* Antonine or later. (511 a–d)

Drag. 46 (not illustrated).

190.—A Central and East Gaulish type, represented by a couple of fragments of different bowls. The form is characteristic of the second century (see O. & P., pp. 195 ff.). (512 a–b)

Déchelette 67 (Fig. 53, 17).

191.—One of a number of examples of the type. Ivy leaves *en barbotine*. Good ware and glaze. Early second century. (513 a–e)

Curle 11 (Fig. 53, 12).

192.—One of a number of examples. *En barbotine* decoration. Good ware and glaze. Flavian. (514 a–f)

Curle 15 (Fig. 53, 14).

193.—One example illustrated from a number of varieties. Part of strap-handle still attached. Almost entirely a second-century type. Good ware and glaze. Early second century. (515)

### 3. Stamps on Pottery.

#### (i) On Samian Ware.

(*a*) On decorated wares.

*See* section on decorated wares, above, Nos. 70, 98, 108, 121, and 158.

(*b*) On plain wares—definitely identifiable.

1.—ATT[I]VS—ATTIVS. Drag. 27. Lezoux. Trajan–Hadrian. Probably the same potter as the user of the OF

ATT stamp (37—see decorated Samian, No. 121 above), although this stamp is not found on plain forms. ATTIVS. FE: York (18), Caerwent (18/31), etc. Other forms of the name are common. (278)

2.—BI.T.VR.IX.F—BITVRIX. Drag. 18/31. Probably East Gaulish. Hadrian–Antonine. Silchester (31, 27), Water Newton, Hunts. (31—*B.M.C.*, M1942) without stops. The identical stamp is recorded at Elouges with coins down to Commodus. (279)

3.—OF CALV[—CALVVS. Drag. 27. La Graufesenque. Flavian. Silchester (18), Novæsium (early 37—K., 1919, Pl. 17 C), London (18—*B.M.C.*, M620, etc.), Brecon Gaer (27—with stamp of MOMMO). (280)

4.—OF CEN[S—CENSOR. Drag. 18. La Graufesenque. Flavian. Richborough (18—in deposit of late first-century date—*Richborough*, i, p. 65). Also on bowls (37) with typical Flavian ornament (K., 1919, Pl. 22, C). (281)

5.—? GNATIVS (*two stamps, set crosswise one over the other*)—? GNATIVS. Drag. 27. South Gaulish. Flavian. The reading of the name is doubtful. A somewhat similar stamp occurs on Arretine Terra-sigillata (see May, *Silchester*, Pl. LXXXI, 4, 6, 7, 12, and O. & P., Pl. II, 2) where the name is read CN. ATEIVS. It is suggested that this is a copy of the Arretine stamp by a later South Gaulish potter, but the reading may also be GNATIVS. (282)

6.—OF CN SEN—? name. Drag. 18 to 18/31. South Gaulish. Flavian. Wroxeter (18—in a deposit dated not later than 150 A.D.—*Wroxeter*, iii, p. 45), Cannstatt (31). Stamps O CN SENO and SENO (South Gaulish—Tiberio-Vespasian date; *see* O. & P., p. 85) and this may be the same potter. (283)

7.—OF COT[—COTTO. Drag. 18. La Graufesenque. Flavian. Richborough (18—*Richborough*, i, p. 66), Wroxeter (deposit dated *c.* 120—*Wroxeter*, ii, p. 34). (284)

8.—CVRMILLI M—CVRMILLVS. Drag. 33. Lezoux. ? Trajan–Hadrian. Richborough (18/31—*Richborough*, i, p. 67). Placed by Bushe-Fox in early half of second century. (285)

9.—DECVMI$\overline{\text{NI}}$·M—DECVMINVS. Drag. 31. Central Gaul. Hadrian-Antonine. London (31—*B.M.C.*, M. 1960, 1961), Chester (18/31); DIICVMINVS at Silchester (? 18), Corbridge (31), London (18), DECVMINI at London (18). (288)

10.—D$\overline{\text{ON}}\overline{\text{NA}}$VCI—DONNAVCVS. Drag. 27. Lezoux. Domitian–Trajan. Common at Wroxeter on various forms,

at low levels, and placed by Bushe-Fox in the period 80–120 A.D. (*Wroxeter*, i, p. 52). (286)

11, 12.—OF FLGE—FLAVIVS GERMANVS (two). Drag. 27. La Graufesenque and Banassac. Flavian. See Wheeler, *Brecon Gaer*, pp. 234–5 for a detailed list of this potter's stamps. (287, 313)

13, 14.—OF FRONTINI—FRONTINVS (two). Drag. 18. La Graufesenque. Flavian. Richborough (18—end of first-century deposit ; *Richborough*, i, p. 69), Wroxeter (18—80–120 A.D. level) ; Newstead (ditch of early fort—*Newstead*, p. 236) ; Camelon (29). (289, 290)

15, 16.—FVSCI—FVSCVS (two). Drag. 33 and 18. La Graufesenque. Flavian. Augst (29—K., 1919, p. 46 and Pl. 33). Given a Flavian date by O. & P. (p. 81) ; tentatively placed by K. in the Claudian period. (291, 292)

17.—·ILLIXO·—ILLIXO. Drag. 33. Lezoux. Trajan–Antonine. Corbridge (18/31, and two 31) ; Wroxeter (three 33, and 18, incomplete). (293)

18.—IOENALIS F—IOENALIS. Drag. 27. East Gaul (Luxeuil). Trajan–Hadrian. The decorated wares of this potter are of the so-called Luxeuil type See *Wroxeter*, iii, p. 46, for a signed 37 at Colchester with this type of decoration. (294)

19.—IVNIVS—IVNIVS. Drag. 18 to 18/31. Lezoux. Domitian–Trajan. Chester (18/31); Poitiers (18). The stamps IVNI and IVNII are also recorded (*e.g.* at Silchester (27) and Neuss) and probably belong to a La Graufesenque potter. (295)

20.—IUU[—IVVENIS. Drag. 31. Rheinzabern. Antonine. Moulds of this potter have been found at Rheinzabern, where his stamps are common. He also made Drag. 32, a form which is especially characteristic of the late second-early third centuries (O. & P., p. 116, etc.). (296)

21.—OF·L·COS·V|—L. COSIVS VIRILIS. Drag. 18. La Graufesenque. Domitian–Trajan. Stamps of both L. COSIVS and L. COSIVS VIRILIS occur, and may represent two separate, though contemporary, potters. (297)

22.—LENTISCVS—LENTISCVS. Drag. 18. South Gaulish. Flavian. Cirencester (18, 27), Wiesbaden (18, 27). (298 a–d)

23.—MARCELLIVI F—MARCELLINI. Drag. 31. Central Gaulish. *Hadrian*–Antonine. Corbridge (31), Colchester (80), London (33, 81). (299)

24.—MEDETI·M—MEDETVS. Drag. 18. ? East Gaul (Luxeuil). Domitian–Trajan. Corbridge (31), London (three,

18); Wroxeter (two, 18). The stamp is found in association with the so-called Luxeuil type of decoration. (300)

25.—MEMOR·M—MEMOR. Drag. 27. La Graufesenque. Claudius–Flavian. Hofheim (27—in Flavian occupation), London (two 27, 18), Pompeii (37). (301)

26.—MVXTVLLI·M—MVXTVLLVS. Drag. 31. Lezoux. Hadrian–Antonine. Chester (33), Richborough (33, 38), Wroxeter (31, etc.). (302)

27.—[P]ATER·F—PATER. ? Drag. 27. Probably Lezoux. Hadrian–Antonine. Saalburg (31), Newstead (33–Antonine). (303

28.—PATRIC·—PATRICIVS. Drag. 27. La Graufesenque. Flavian. Chester (27—two, dated 77–79 A.D.). OF PATRICI on 29 at La Graufesenque (D., i, p. 294), Pompeii (O. & P., p. 84, etc.). (304)

29.—[O]F RVFI—RVFVS. Drag. 18. La Graufesenque, and Montans. Nero–Flavian. Chester (three, 27), Richborough (18, 27). OF RVF on 29 at London and Camelon. (305)

30.—SECV̄NDI—SECVNDVS. Drag. 27. South Gaulish. Flavian (early). Chester (27), Richborough (27), Wroxeter ("in connexion with late first and early second-century pottery"). Probably a La Graufesenque potter, who also made decorated bowls 29 and 37 (D., i, p. 299; K., 1919, Pls. 73, 74). The present cup has the external groove on the foot-ring which is said to be a fairly constant early feature. (306)

31, 32.—OF·SEX·CN—? (two). Drag. 27. La Graufesenque. Domitian–Trajan. The form of the N is uncertain, and may = AN. OF SEX CN at Orange (27, Saalburg (–), La Graufesenque (–), OF SEX CAN at Vechten (18), Heddernheim (18), La Graufesenque (–), Tongres (–). Dr. Felix Oswald, whom I have to thank for these references, suggests that the stamp may represent a partnership of SEXTVS and ? CANVS. (307, 308)

33.—]RTVLLI—TERTVLLVS. Drag. 33. Probably Lezoux. Trajan–Hadrian. The stamp TERTVLLVS occurs at Clermont; it does not appear to have been otherwise recorded. (309

34.—OF VIRILI—VIRILIS. Drag. 18. La Graufesenque. Flavian. London (18), Silchester (18, etc.); also on 29 at Rottweil, Baden-Baden, etc. (310)

35, 36.—OF VITA—VITALIS (two). Drag. 27. La Graufesenque. Nero–Flavian. Newstead (18—early fort), and many first-century sites on Rhine; also on 29, (*e.g.* at Richborough, London, Pompeii). (311, 312)

(*c*) On plain wares—uncertain.

37.—Drag. 27. May be AVNVS of Lezoux (?). *Period :* Trajanic (?) (315)

38.—? Form. Probably CENSOR of La Graufesenque (see above, 4). *Period :* Flavian. (316)

39.—Drag. 31. ? CENSORINVS of Lezoux. *Period :* Hadrian–Antonine. (317)

40.—? Drag. 31. ? CINNAMVS of Lezoux. *Period :* Hadrian–Antonine. (318)

41.—Drag. 18/31. Possibly COC(C)ILLVS of La Graufesenque. *Period :* Domitian–Trajan. (319)

42.—Drag. 27. May be INGENVVS of La Graufesenque. *Period :* ? Flavian. (320)

43.—Drag. 18. Probably PASSIENVS of La Graufesenque (see above, p. 119, No. 176). *Period :* Nero-Vespasian. (321)

44.—Drag. 27. Possibly PASSIENVS, as last. (322)

45.—Drag. 18/31. ? PATERCLOS of Lezoux. *Period :* Domitian–Trajan. (323)

46.—? Form. Almost certainly PATRICIVS of La Graufesenque. See p. 124, No. 28 above. (324)

47.—Drag. 27. ? VINNIVS. Stamps VINI and VIN at Emporion, VINNI M at Colchester (33). ? South Gaulish. *Period :* Domitian–Trajan. (325)

48.—Drag. 18 to 18/31. Possibly = VINNIVS (see 47, above) but quite uncertain. (324 a–b)

49.—Drag. 33. Large rosette-stamp, incomplete. Second century. (326)

(ii) On Mortaria.

Out of large numbers of rims only three stamps were found, and one of these is now lost. Some of the mortaria of local make had incised panels of lattice-work on each side of the spout in the position of the stamps.

1.—MATVGENVS FECIT. See section on coarse pottery below, No. 17. (553)

2.—]OLLVS—Probably = SOLLVS. Fragmentary rim probably of similar type to Wroxeter 34–42 (*Wroxeter*, i, p. 77, dated 80–110 A.D.). *Cf.* May, *Silchester*, p. 277, 18. (766)

3.—A third stamp, " ELIVS F P L ", is recorded (noted by Professor Haverfield) but is lost.

(iii) On Amphoræ.

There were large numbers of amphora-handles, and fragments of bodies, but only three stamps were recovered.

1.—Q C C C (?)—The last letter is uncertain, but appears to be either C or E. (767)

2.—? GR RV S—Blurred and uncertain. (767)

3.—III ENN IVL *with wreath—TRIUM ENNIORUM IVLIORUM*, a well-known firm which worked apparently during the late first and early second centuries. *Brecon Gaer*, p. 246, 3–4 ; *Richborough*, i, p. 85, 5. (767)

### 4. Small Objects.

#### (i) Metal, Etc.

Figs. 54–6.

1.—Bronze penannular brooch of " writhen " knob type. The pin missing. (516)

2.—Bronze penannular brooch with reverted ends. A more elaborate example at Wroxeter (*Wroxeter*, iii, Pl. XVI, No. 14) is dated 80–120 A.D., and a closer parallel at Caerleon Amphitheatre (*Archæologia*, 78, p. 166, No. 23) to the Hadrian–Antonine period. But all the penannular brooch types had a long life, and do not appear to allow of close dating. (517)

3.—Bronze penannular brooch with elaborately moulded reverted ends. Pin of wire twisted round ring. Remains also of a bronze guard-chain. (518)

4.—Bronze trumpet-headed brooch, the head missing. The mouldings on bow and foot closely resemble those of *Wroxeter*, ii, Fig. 4, No. 5 (and p. 13), dated " about or a little before the middle of the 2nd century ". (519)

5.—T-shaped bronze brooch, with diamond-shaped boss and incised pattern on bow. Akin to *Caerleon Amphitheatre*, Fig. 13, Nos. 7 and 8, the latter (unstratified) being a particularly close parallel. The type belongs to the late first century and first half of the second. (520)

6.—Bronze knee-brooch. A well-recognized type, of late second–third century date (*Newstead*, p. 325 ; *Wroxeter*, i, p. 24). (521)

7.—T-shaped bronze brooch with remains of hinged pin. Decorated with raised ribs terminating on the bow in horizontal mouldings. Akin to a group at Wroxeter (iii, Pl. XV, Nos. 2–4) two of which are dated to the late first–early second century. (522)

8.—T-shaped bronze brooch. Originally a hinged pin, now missing. The bow is somewhat angular in profile, with a straight foot with terminal moulding. The decoration on the bow consists of a series of shallow mouldings badly corroded, with four circular depressions which probably origin-

ally contained settings. No parallel can be found for the type. (523)

9.—Bronze trumpet-headed brooch with collar-mouldings on bow and flattened underside. Compare *Segontium*, Fig. 56, 1, *Wroxeter*, i, Fig. 10, 8, the latter dated 80–110 A.D. The Backworth group of brooches to which this belongs dates apparently to the first half of the second century, but the various typological features do not allow of close dating without other evidence, early and late forms existing side by side. (524)

10.—T-shaped bronze brooch with hinged pin, decorated with oblong panels on the bow which may originally have been filled with enamel. *Cf. Caerleon Amphitheatre*, Fig. 13, No. 13, dated *c.* 130–160 A.D. The bow has probably been accidentally bent out of shape at the middle of the panels, since pin and catch-plate would not connect properly in their present position. The profile of the bow probably more closely resembled that of the Caerleon example referred to. (525)

11.—Knee-brooch of white metal (?). A well-known type dated generally to the end of the second and early third century (*Newstead*, p. 326). (526

12.—Bronze harness-fitting (?) consisting of four legs cast in one piece with a central diamond-shaped boss, and carrying circular end-plates containing pins which may have been intended to take straps. The back is flat, showing that only one face was exposed to view, and the central boss projects beyond the common level of the end-plates. (527)

13.—Bronze phallic pendant. In two parts, the upper crescent-shaped with moulded ends, and angular in section, with a hole to take the lower, a hooked plate carrying the phallic symbol. A type of fairly common occurrence on military sites (*e.g.* ORL, *Kastell Friedberg*, Pl. V, 2). (528)

14.—Part of a bronze object of uncertain use: a broken cylindrical shaft carrying a flat plate with a semicircular opening in its wide end. (529)

15.—Spoon of white metal (?), the handle decorated with ball and collar-mouldings, the usual simple pointed end being replaced by a spear-shaped fitting. A second spoon was found, but has since been lost. (530)

16.—Bronze spur, partly broken, decorated with scrolls of "stabbed" ornament. A type apparently unparalleled, although the decoration suggests a Roman origin, and there seems to be no doubt about its having been found at Holt. (531)

17.—Bronze ring, much corroded, the oval intaglio missing. From the sandstone gutter on the north-east side of the bath-building. (532)

18.—Bronze bolt for tumbler-lock. One of two found. (533)

19.—Tweezers, nail-pick, and ear-pick, found together near No. 2 kiln. Loop and pick in the last two have been hammered out of one piece (*cf.* a similar set from London, *Guildhall Mus. Cat.*, Pl. XXVI, 19). (534)

20.—Bronze handle of box or casket, one end broken. (535)

21.—Corroded remains of bronze disc, with engine-turned incised concentric circles. Perhaps the bottom of a skillet or saucepan. (536)

22.—Bronze buckle-plate with three studs on underside. The decoration closely resembles that of an example from Manchester originally decorated with niello by the champlevé process (Bruton, *The Roman Fort at Manchester*, Pl. 90, 15). (537)

23.—Bronze buckle-plate with two studs on underside and openwork fret decoration. *Cf.* ORL, *Kastell Feldberg*, Pl. VI, 30. (538)

24.—Lead disc with notched edge and four keyhole-shaped perforations at centre. A similar disc at Osterburken (ORL *Kastell Osterburken*, p. 37 and Pl. VI, 39) with twelve holes is said to be a game-counter. (539)

25.—Thin bronze plate with hole for rivet. Probably a strap- or belt-facing. (540)

26.—Iron key. One of two examples found. (541)

27.—Iron spearhead. (542)

28.—Iron needle or bodkin. (543)

29.—Iron sandal-nails, found in leaden lamp-holder in the bath-building. (544)

30–31.—Iron nails. Two from the large quantity recovered from the barrack-buildings. (545)

32–34.—Iron bits for brace and bit. (547)

35.—Part of tablet of shale decorated with a border of incised interlacing semicircles. Perhaps part of a game-board. (550)

36.—Stone spindle-whorl. One of four preserved. (551)

*Not illustrated.*

37.—Miscellaneous collection of bronze fragments, including plain rings, part of a box-handle, part of a penannular brooch with "writhen" or grooved knobs, as No. 1 above, and part of a bronze nail-pick, with pierced hole for attachment to a swivel. (552)

38.—A quantity of iron objects from various "find-spots", including rings, knives, nails, and also two iron styli of ordinary type, with chisel-end for erasing. Most of the iron objects were much corroded. (545)

39.—A quantity of unworked lead-fragments, probably waste from the manufacture of leaden objects which was ap-

parently carried on at Holt. The collection also includes four conical plum-bobs (*cf. B.M. Guide to R. Britain*, Fig. 40); part of a small water-pipe; discs, and other objects of indeterminate use. (546)

40.—Besides traces of iron and lead-working, in the form of scoria for the former, and waste-fragments for the latter, bronze also appears to have been smelted. The structural remains of these activities were apparently only slight, and in any case have not been recorded on the plans. Included in the finds, however, is a small quantity of copper scoria with the fragments of at least three small crucibles of hard grey ware, one of which shows traces of bronze still adhering to its inner face. The diameter of the most complete crucible is 65 mm. (thickness of wall 8 mm.) with one lip for pouring off the molten metal. For somewhat similar crucibles *cf. Wroxeter*, i, Pl. III, 2. (548)

41.—Part of a hemispherical cup or bowl, original diameter 90 mm., and height 30 mm., ? of lead or pewter, much oxidised. (549)

### (ii) Glass, Etc.

(a) *Glass.*—Window-glass of ordinary type was common in all the domestic buildings on the site. The commonest vessel is the square glass bottle, which is represented by many fragments of walls and bases, and by one or two necks and handles. There is also a small quantity of fine glass in various colours, including fragments of pillar-moulded bowls and long-necked bottles, all of which are too fragmentary for illustration. (774)

(b) *Beads.*—The ubiquitous blue "melon"-bead is represented by three or four examples. There is one bead of ordinary green glass. (774)

(c) *Intaglios.* (Fig. 60, 1, 2).

1.—Carnelian. Draped figure of Minerva (?) wearing plumed helmet, and holding in her right hand a spear and in her left a statue of Victory winged and carrying a wreath and a palm (?). Behind the goddess is an uncertain rock-like object. (789)

2.—Carnelian. Draped figure of Demeter or Ceres standing l. and holding in her right hand a basket of fruit, and in her left two ears of corn. For the same subject see P. Fossing, *Catalogue of Antique Engraved Gems and Cameos* (Thorvaldsen Museum, Copenhagen, 1929), 1711, etc., and compare ORL, *Kapersburg*, Pl. V, 3. In the better worked Copenhagen examples the object in the field is recognizable as an ant, but the poorer workmanship of the Holt intaglios makes its identification impossible. (789)

### (iii) Pottery, Etc.

Fig. 57.

1.—Head of buff ware with remains of white slip-coating, originally part of neck of jug. Good workmanship. *Cf. Richborough*, i, 184, " probably 3rd or 4th century ". (758)

2.—Mask of tile-red ware, in low relief. The treatment of the head-dress, with the row of curls below, the wide-open eyes and open mouth, recalls that of the well-known Caerleon ivory carving (Wheeler, *Prehistoric and Roman Wales*, Fig. 97 ; Lee, *Isca Silurum*, Pl. XXIX and p. 59 f.). Fairly good work, although the modelling of the features is somewhat weak and indistinct. The back is plain and slightly concave, suggesting that the mask was originally intended for application to a pottery-vessel, after the manner of the well-known bronze ewer, which frequently carries similar applied decoration at the base of the handle. (758)

3.—Crudely-fashioned head of tile-red ware. The head is hollow right through, and may have been intended for a jug of similar type to 1. There is one other small poorly-executed head. (758)

4.—Circular stamp of good buff ware, with head of Silenus in low relief. Excellent modelling and workmanship. The style recalls second-century types used by Samian potters (*e.g.* Ludowici II, M5–7, etc.) but the workmanship is finer. The stamp (already described by Haverfield, *op. cit.*, above, p. 5) does not appear to have been used, and is in all probability the master die, from which other stamps would have been made. The head may have been intended for applied decoration to pottery, or, perhaps, for the decoration of pottery lamps (below, p. 174). Its size is well adapted for the latter purpose. The stamp has a short cylindrical shaft. (761)

5.—Circular stamp of softish buff ware, showing a bunch of grapes, for direct application to object to be decorated. No example of the use of this stamp has been found. Short cylindrical shaft. (762)

6.—Rosette-stamp of good buff ware, like the last, for direct application. This stamp is apparently that used on the stamped ware bowl, p. 181 below, No. 5. Cylindrical shaft broken. (763)

7.—Circular stamp of good buff ware, probably slipped. The handle is missing. The letters themselves are incomplete, but appear to read : Ↄ VARENI PROCLEIANI[ . The missing space apparently represents five or six letters, perhaps LEG XX, so that the whole would read LEG XX Ↄ VARENI PROCLEIANI. Such centurial stamps or dies, apparently for

stamping centurial property, are not unknown, and leaden dies have been found both at Chester and Caerleon. See also below, 9. The century of Varenius Proc(u)leianus does not appear to have been recorded elsewhere. The fresh condition of this stamp suggests that it was never used. (764)

8.—Mortarium-stamp of good buff ware, slipped, of the potter IVLIVS VICTOR. The name in the genitive, with the I and R ligatured. Good lettering, enclosed in an ansate panel with notched edges. The unworn condition of the stamp, even the guide-lines of the letters being clearly visible, suggests that like some of the other stamps found, it was never used. The name is not otherwise recorded on mortaria, at Holt or elsewhere. (760)

Fig. 60.

9.—(Fig. 60, 5). Circular stamp of tile-red ware. Sunk centre with notched edge and leaf pattern. Enough of the inscription does not remain to determine its meaning, although the letters themselves are clear. Like 7, however, it may have been centurial. The purpose of these stamps is uncertain, but they could only have been used for stamping some comparatively soft material such as clay or bread. (765)

10.—(Fig. 60, 6.) Roughly cylindrical hollow object of uncertain use, of coarse tile-red ware, one end broken. For the decoration, see coarse pottery below, No. 237. For closely similar forms see ORL, *Faimingen*, p. 99 and Pl. XII, 4, and ORL, *Stockstadt*, p. 119 and Pl. X, B17. The former, which is of much better make and form, is explained as a "handle", the other as probably a stopper. In the Holt example, however, the decoration, whether accidentally or otherwise, is only carried halfway round the side, the remainder being rough and unfinished. (787)

11.—(Fig. 60, 7.) Part of a pestle of hard dark-red ware. Fragments of two of these, and perhaps a third. They have also been found broken at Chester. (786)

12.—(Fig. 60, 8.) Game-board of buff ware with buff slip. Apparently for use in some kind of game in which perhaps twelve counters or pieces were used on each side. The arrangement consists of lines of twelve roughly-incised conventionalized ivy leaves, on opposite sides, with a geometrical pattern in the middle. Down the centre of the board runs an incised line carrying twelve pairs of scrolls corresponding to the ivy leaves with the geometrical compass drawn pattern in the centre. The whole is enclosed by a raised moulded border probably to prevent the pieces leaving the board. Compare above, p. 128, No. 35. (780)

### 5. Carved and Inscribed Stones and Graffiti.

The inscriptions have mostly been described by Haverfield (see his articles already referred to) and a brief catalogue will therefore suffice here.

(a) *Stones.*[1]

1.—Centurial stone 16 by 6 inches, ansate and inscribed Ↄ RVFI. SABI/ GNΛTΛV (? = GNATLΛ, but while there seems to be no doubt about the letters the meaning is unknown). The century of Rufius Sabinus is not otherwise recorded. (262)

2.—Centurial stone 28 by 7 inches, ansate and inscribed S. (? or C) P.P. towards the left-hand side of the panel, leaving a long space after the second P. The finished state of the ansate, when compared with the crudeness of the lettering suggests that such ansate stones were made and kept in stock for use as required, the inscriptions being added later. (263)

3.—Centurial stone of similar type, 10.2 by 8 inches, inscribed Ↄ CESONIANA. This century also does not appear to be otherwise recorded. The back and sides of the stone are scored for keying in cement or mortar. (264)

4.—Fragmentary sandstone block 13 by 8 inches with single incised C. (265)

5.—Fragment of quern-stone, the edge inscribed Ↄ APA[ . probably the mark of the century to which the stone belonged. *Cf.* the quern-stone at Chester inscribed Ↄ NAEV (Haverfield, *Inscribed Stones*, No. 204). Other fragmentary quern-stones, uninscribed, are included in the finds. (273, 274–7)

6.—Fragmentary sandstone block 7 inches high, with a half-round moulding carried round three sides, perhaps the base of a small altar, inscribed : M . . Ↄ S/FOGVA /VIIΩ/ /ΛΛC. Meaning unknown. (270)

7.—Sculptured stone 12 by 10½ inches bearing rudely carved human face in low relief. (266)

8–10.—Phallic stones, roughly squared blocks of sandstone bearing more or less conventionalized phalli carved in high or low relief.[2] (267–9)

[1] The "find-spot" of only one of these stones is given in any detail, viz. No. 1, which is stated to have been found "upside down in the central drain of the enclosure" (*Acton Letters*, 17.3.1915), and several others were apparently not in the positions for which they had originally been intended. The phallic stones (below, Nos. 8–10) had been used, or re-used, in the same way as ordinary building-stones (*Acton Letters*, 9,2,1915).

[2] One of the phallic stones came from a kiln wall, but this was apparently not its original position. *Acton Letters*, 1.5.1912. See also footnote above.

11–12.—Other fragmentary stone blocks, showing traces of moulding or incised ornament of uncertain purpose. (271–2)

(b) *Graffiti on Tiles.*

The graffiti on tiles are for the most part fragmentary and of uncertain meaning. The most important is that already published, relating to the Cohors I Sunicorum (Fig. 60, 3).

13.—Fragment of flanged roofing-tile stamped LEG XX VV (No. 30 in list below, p. 142), from the wall of No. 4 (tile) kiln, with the graffito, in bold cursive lettering :

IVLIVS AVENTINVS MILIS
CORTIS PRIMA . SVNICOR(VM)

(See Haverfield, *Roman Britain in* 1913, p. 30, etc.) The cohort was in Britain in 124 A.D., and at Caernarvon *c.* 210 A.D., but the exact bearing of this inscription on traffic between the two places is somewhat uncertain. See above, p. 44. (768)

14.—Tile fragment inscribed AB. (243)

15.—Tile fragment inscribed ASIA/PR/SPVS. (244)

16.—Tile fragment inscribed XXVV = *leg*]*xx vv.* (245)

17.—Tile fragment inscribed DN (246)

18.—Tile fragment inscribed XXX (247)

19.—Tile fragment inscribed AVGV/G (248)

20.—Tile fragment inscribed IN/VS.CC (249)

21.—Tile fragment inscribed MS (250)

22.—Tile fragment inscribed SG/ZXXX (252)

23.—Tile fragment inscribed NVI/SSVI (253)

24.—Complete tile inscribed AVE/DO/IVII/NA, each line in small rectangular panels, as though stamped, and the whole enclosed in a single large panel. Meaning uncertain. (254)

25.—Fragment of *imbrex* inscribed DE Z XXXXV = *Devensis ? centvria xxxxv.* (255)

26.—Tile fragment inscribed AMQPOX (256)

27.—Tile fragment inscribed XXII. II. ? = *leg*]*xx vv* (257)

28.—Tile fragment inscribed VV (258)

29.—Tile fragment inscribed TVS/SSIVS (259)

30–1.—Tile fragments bearing roughly incised designs of uncertain meaning. (260–1)

(c) *Graffiti on Pottery.*

The graffiti on pottery are few, and confined mainly to personal names—probably those of the owners of the particular vessels, rather than of the potters themselves.

32.—Fragment of amphora with incomplete inscription in two lines NIC/SC—perhaps part of a name (*e.g.* Nicephor) and measure of the vessel. (251)

33.—Fragment of thin-walled beaker of good buff ware, with buff slip (? carinated type, No. 180) with incomplete graffito ERMES /. (769)

34.—Fragment of jug of tile-red ware, complete form uncertain, with graffito around base of neck, scratched after firing, VICTORI [ = *Victoris.* (769)

35.—Fragment of small olla of good buff ware, inscribed BVTR[ = *Butrio.* (769)

36.—Part of a large flanged bowl or dish of coarse red ware, inscribed QVINTI M[ = *Quinti m(anu).* (769)

## 6. Building Materials.[1]

(a) *Water-pipes.*—Two main types are represented. The first is wheel-made, and shows slight variations in form. The second is much cruder, hand-made, and trimmed over vertically with a sharp tool before firing. The good workmanship shown in the first is evidence of a high degree of knowledge and skill in the throwing and firing of such large articles, and the same is true of all the building materials produced at Holt. Moulding and throwing are both good ; the ware is thin considering the size of the article, while at the same time it is maintained at a uniform thickness throughout. The pipes are truly thrown (the slight barrel-shape present in some examples is probably an outcome of throwing) and there is no sign of distortion during firing. The first type is provided with a flange to fit the socket of the pipe in front (see Fig. 60, 13) ; in the cruder type, however, the wider end acted as a socket for the same purpose. The dimensions of the variations of type 1 are in the main uniform, their lengths ranging from 2 feet 2 inches to 2 feet 5 inches. Type 2 has a length of 1 foot 11 inches. For similar pipes see *Germania Romana*, ii, Pl. XXXII, 3 (from Wiesbaden and Rodelheim). A fragmentary pipe of smaller size, and poorer workmanship was also found at Gelligaer. The four examples figured are (Fig. 60) :

1.—Bead-mouldings on flange, shoulder, and socket-end of pipe which may or may not be barrel-shaped. (7, 9)

2.—Bead-mouldings on flange and socket only ; barrel-shaped. (3–6, 11, 12)

3.—Bead-moulding only on socket, or altogether wanting. (2, 8, 10)

[1] For stamped tiles and antefixes, see the following two sections.

4.—Hand-made pipe, cone-shaped. Diameters of ends $7\frac{1}{2}$ and $5\frac{1}{2}$ inches, the larger end forming a socket for the next pipe. (13–15)

(b) *Bricks* and *Tiles*.—The usual standard sizes of bricks and tiles were made at Holt:

1.—*Small bricks* measuring $4\frac{1}{2}$ by 3 (or $3\frac{1}{2}$) by $1\frac{1}{4}$ inches, commonly used set on edge for "herring-bone" pavements. (54—63)

2.—*Bricks* measuring on the average $8\frac{1}{4}$ inches square by 2 inches thick. A standard size commonly used for the pillars of hypocausts. (64–83)

3.—*Large bricks* varying from $10\frac{3}{4}$ to $11\frac{1}{2}$ inches square with a thickness of 2–3 inches. Used for paving and drain-covers and also in kiln-walls. (84–7)

4.—*Facing* or *revetment tiles*. Two sizes, the smaller approximately 2 feet by 1 foot by 1 inch thick, the second 2 feet square (*i.e.* twice the size of the first) by 2 inches thick. The backs of the former are scored for keying to plaster, while the latter are pierced with holes for fixing to the wall. One of these has a heavy mass of concrete still attached. These tiles were used at Holt for facing the walls of the bath-building hypocaust-room (see Fig. 10 above).

5.—*Flanged tiles*. Two types: (i) Flanged roofing-tiles (*tegulae*) all of uniform size—length 1 foot 8 inches., width at top 16–17 inches, at bottom 15–$16\frac{1}{2}$ inches. The height of the flange is generally about 2 inches.[1] (ii) Other flanged tiles not of ordinary tegula form, and generally fragmentary. In one case the flanges are cut away in the middle on each side, but for what purpose is unknown. A second (broken) has the remains of a large circular opening, perhaps intended as an outlet for smoke, etc. (*cf.* Ludowici, iv, p. 192–3). (1, 96–100, 110, 113)

6.—*Imbrices*. Eleven examples all approximately 19 inches long. Somewhat angular in section, with a diameter at the top of roughly 6 inches increasing to 7–8 inches at lower end. Average thickness: 1 inch. (1, 101–106)

7.—*Ridge tile*. One example, length 19 inches, for covering joints of *tegulae* at summit of roof. The width is the same throughout, and the section truly semicircular, while the *imbrex* increases in width from top to bottom, and is more triangular in section. (106)

8.—*Box tiles*. Five out of the six sizes of box tiles apparently conform to a fixed standard:

[1] These dimensions agree roughly with those of the few Chester *tegulae* measurements of which have been published.

(i) Single box tiles with an average length, width, and depth of 6 inches. (30–1)

(ii) As (i) but double the length (*i.e.* $12 \times 6 \times 6$ inches), the two lateral faces pierced with round holes. (32–5)

(iii) As (i), but all dimensions doubled (average $12\frac{1}{2} \times 11 \times 12\frac{1}{2}$ inches). (21–6)

(iv) As (i), but three times the length (average $17\frac{1}{2} \times 6 \times 6\frac{1}{2}$ inches), four lateral openings, two to each side, sometimes rectangular and sometimes oval in shape. (16–20)

(v) Double box tiles with dimensions corresponding to those of two of type (i) combined (*i.e.* $12 \times 7 \times 11\frac{1}{2}$ inches). The two channels do not communicate with each other, but one of them has a hole in each of two sides, while the other has no openings. These tiles were used at Holt for the main channel of the bath-building hypocaust (above, p. 18). (36–42)

(vi) Single box tiles, approximately 9 inches square, with a length of 7 inches. (27–42)

9.—"*Bridge-tiles.*" The bridge-tiles were used at a juncture of the main flues of the hypocaust in the bath-building, as described above (p. 19, and Fig. 9). Dimensions: 1 foot square, with a large square hole cut out in the centre to allow passage of the air. In section they are somewhat wedge-shaped, their thickness decreasing from bottom to top from 3 to 2 inches. (52–3)

10.—*Voussoir-tiles.* Wedge-shaped tiles used as arch-voussoirs, particularly in the flue-arches of the kilns. They vary considerably in thickness, but there are two sizes, the variation consisting in the width. The length in all cases is 15 inches, while the two widths used are 6 inches and 11–12 inches. (43–5, 90)

11.—*Tiles for use in the kilns.* Two types of tiles were produced for special purposes in kiln-building:

(i) In No. 1 kiln the oven floor was built of rectangular tiles laid on the cross-flue walls with semicircular notches 3 inches in diameter cut in their sides to form vent-holes (p. 35, Fig. 21). These notches were sometimes cut after, but more often before, baking. These tiles are in two sizes: $16\frac{1}{2} \times 11$ inches and $11\frac{1}{2}$ inches square. (107–9)

(ii) V-ended bricks used in the sub-floor of No. 7 kiln (p. 40, and Fig. 30). Dimensions: 1 foot 9 inches long by 6 inches wide. (46–51)

## 7. Antefixes.

Seven varieties of antefixes—triangular tiles decorated with various devices, and set at intervals along the eaves of

buildings—are represented. All seven, however, are of the same general type, and though the motifs used vary, their disposition throughout is the same.

Antefix designs elsewhere [1] have frequently been recognized as having a definite magical or amuletic significance, in the use of motifs which were regarded as having the power to protect the inmates of any building from evil influences. The first of the Holt types appears to belong to this group. The remaining six varieties display the boar, as the badge of the legion, together with the standard in modified forms. Other legions used their own particular badge in the same way.[2]

Only three of the seven types are recorded at Chester (Nos. 1, 2, and 7). Two Chester examples are not represented at Holt: the first, a variety of No. 5, is undoubtedly of Holt manufacture; the second [3] is of altogether different type, which has also been found in London, and was probably imported into Britain from the Continent. One (unpublished) fragment of No. 1 is dated to the late first century (see below).

Fig. 58.

1.—Height 8.7 inches. Flange broken. In centre LEG XX, with boar running r. below, and the *phalera* of a standard above. The shaft of the standard is continued below the legend and boar, ending in a point in imitation of the metal ferrule of the original. Above the phalera the shaft is continued to the apex of the tile, and what appear to be two short swords with hilts complete, are set radially, one on each side, with their points to the centre. Holt: 13 examples. Chester: 1. Brushfield, *Chester Journ.*, O.S., iii, p. 26, Fig. 4; 2. Grosvenor Museum; 3. fragment from St. John Street, Chester, 1929 (from the metalling of Roman road on west side of amphitheatre) with late first-century pottery (information from Professor Newstead). (123, 125–6, 130, 133–41)

2.—Height 9 inches. Flange broken. Design in relief, impressed from mould. In centre LEG XX, with triangular stop between the G and the first X. The legend is not set centrally on the tile. Below: a boar, running r.,[4] and above a head and bust with rayed crown or head-dress, probably in-

[1] As Caerleon, *Caerleon*, i, p. 254. Here, too, the designs, though showing considerable variation in detail, belong mostly to the main type.

[2] *e.g.* the lion of Leg. XVI at Neuss (*Bonn. Jahrb.*, 111/112, pp. 306–9, where other examples are cited).

[3] Figured by Watkin, *Roman Cheshire*, p. 221, No. 3.

[4] The origin of the boar as the badge of the Twentieth Legion is not known (Parker, *Roman Legions*, p. 263), but was in all likelihood totemic.

tended to represent the Sun-god.[1] Holt : 10 examples, one from No. 4 kiln. Chester : 1. *Roman Cheshire*, p. 221, No. 2, " Coll. George Shrubsole " ; 2–3 Grosvenor Museum. (114–18, 121, 127–8, 132)

3.—Height 8.6 inches. Flange broken. Same motifs as last, but poorer execution (contrast, for example, the *phalera*). The swords (?) are replaced by three arrowheads, and the whole is enclosed by a border of a double raised line. Holt : 3 examples. Chester : not recorded. (122, 124, 129)

4.—Height *c.* 10 inches. Flange broken. Some motifs as last, including the three arrow-heads, the whole enclosed in an outer raised border of different type. Holt : 2 examples, both fragmentary. Chester : not recorded. (120, 120A)

5.—Probable height when complete *c.* 7.8 inches. Flange broken. Probably of same general type as Nos. 2–4, but the upper part is missing, and only the shaft of the standard remains. The execution is not so good as in the preceding types. Holt : 2 examples. Chester : not recorded. (119, 119A)

6.—Lower part missing and original dimensions not known. Presumably as before, the missing part carried the running boar. The standard is much more elaborate, but on the only two fragments available the details are so worn and blurred as to make identification impossible. Above the *phalera* the details are uncertain. Below is what appears to be the crescent, and below that again a triangular panelled form recalling the " table " of the legionary *aquila*.[2] The form is unparalleled in the representations of the legionary standard available for comparison. Holt : 2 fragmentary examples, one from No. 5 kiln. Chester : not recorded. (141A, B)

7.—According to the photographs this type was originally found at Holt, but is now lost. Through the kindness of Professor Newstead I am able to figure the solitary specimen in the Grosvenor Museum.[3] The extreme tip is missing. In spite of what appears to be a defect in the mould the *phalera* is executed with greater detail than in the other antefixes. Below it is the crescent, but the shaft is omitted. The well-executed running boar in this case faces l. Holt : originally represented by at least one example. Chester : 1, here figured.

8.—Part of a triangular finial for gable-end of roof, flanged

[1] *Cf.* the use of the wheel-disc apparently as a symbo. of the sun, at Caerleon. Reference above, p. 137. footnote 1.

[2] For the legionary standards see Kromayer-Veith, *Heerwesen und Kreigführung der Griechen und Römer*, pp. 405 ff.

[3] The same antefix is figured by Watkin, *Roman Cheshire*, p. 221 No. 1 (reproduced by Haverfield, *Inscribed Stones*, No 200) but the illustration is unsatisfactory and incorrect in detail.

for insertion under ridge-tile, but the flange broken. The face is decorated with converging notched ridges. Coarse work. (142)

## 8. Legionary Stamps.

The stamps of the Twentieth Legion found at Holt are here listed as completely as they are represented in the Holt collection. It is not actually certain that representative examples of all the stamps originally found were preserved or recorded.

The records available are too scanty to allow of any date being fixed from the evidence at Holt. Some of the stamps, however, have been dated by Professor Newstead at Chester, and this evidence is incorporated in the accompanying list.[1] Style and quality of workmanship should not perhaps in themselves be regarded as evidence of date, and information derived from the stratification and association of one particular stamp cannot be applied with certainty to all stamps from the same die.[2]

Of the 33 stamps 19 are listed (Nos. 1–17, 32, 33) as having been found at Chester. For these numbers, however, it has been found practicable to consult only the Grosvenor Museum collections, and the publications referred to in the list. Many other stamps in private possession have probably been passed over.[3]

Fig. 59.

1.—LEG XX VV within ansate border. A variety has a round stop in the right-hand ansate. Holt: 10 examples. Chester: 1–2, Hunter Street; 3, Deanery Field (*early second century*).[4] (215, 217–25, 228, 230)

[1] Once again I have to thank Professor Newstead for his kindness in placing his records of legionary stamps found at Chester at my disposal. In nearly all cases the evidence of date is derived from the cemetery in the Infirmary Field, Chester, which appears to have been established at the close of the second and beginning of the third centuries. Newstead, Reports I and II in Liverpool *Annals*, vi, pp. 121 ff.; viii, pp. 49 ff.

[2] Many of these legionary stamps had a long life, or at least were subject to widely different circumstances which have had their effect upon stratification. Thus, at Caerleon Amphitheatre (*Archæologia*, 78, p. 161, Nos. 7, 8) two identical stamps were found in circumstances dating them to *c.* 260–90 A.D., and "soon after 200" respectively—a difference of some fifty years.

[3] Some published Chester stamps are not present at Holt, *e.g.* Newstead, *Records*, p. 65, 3.

[4] A tile bearing this stamp was found at Whittlebury, Northants (*V.C.H. Northants*, i, p. 215), and is now in the Northampton Museum. I have to thank the Curator, Mr. Reginald Brown, for details. Its presence so far to the east is as yet unexplained.

2.—LEG XX VV in rectangular label. Holt : 3 examples. Chester : 1–5, Infirmary Field Cemetery (*late second–early third century*, R. Newstead) ; 6, Bridge Street, 1864 (*Chester Journ.*, O.S., iii, p. 26) ; 7, Deanery Field, 1928 ; 8, Grosvenor Museum ; 9, Infirmary Field. (178, 180, 187)

3.—LEG XX VV. Holt : 4 examples. Chester : 1, Infirmary Field (*late second–early third century*). (183, 185, 200–1)

4.—LEG XX VV. Holt : 2 examples. Chester : 1, Infirmary Field (*late second–early third century*). (205–6)

5.—LEG XX within ansate border, three triangular dentures at each end of label. Holt : 2 examples. Chester : 1, Infirmary Field (*late second–third century*) ; 2, Infirmary Field. (213, 229)

6.—LEG XX VV within ansate border. Holt : 2 examples. Chester : 1, Infirmary Field (Grave 26, *late second–early third century*) ; 2, " Coll. F. Potts " (Watkin, *Roman Cheshire*, 119, Fig. 3) ; 3, Infirmary Field (Grave 35). (222, 226)

7.—LEG XX VV within ansate border. Holt : 9 examples, one on a ridge tile (*imbrex*). Chester : 2, both Hunter Street, 1914. A poor impression on same tile (216) as No. 18 below, and therefore contemporary with it. (181, 194–9A, 216)

8.—LEG XX VV within ansate border. Holt : 3 examples.[1] Chester : 1, Grosvenor Museum. (214, 231, 233)

9.—LE]G XXVV. Holt : 1 example. Chester : 1, Grosvenor Museum. The missing portion completed from the latter. For a somewhat similar stamp of the Twentieth Legion from Carlisle, *see* May, *Carlisle Pottery*, pl. xviii, 3. (208)

10.—LEG XX VV. Retrograde, within ansate border. Holt : 3 examples, one (147) from No. 4 (tile) kiln. Chester : 1, Grosvenor Museum. (147, 190–1)

11.—LEG XX V. Holt : 2, both from No. 4 (tile) kiln. Chester : 1, figured by Brushfield, *Chester Journ.*, O.S., iii, p. 18—" Coll. F. Potts " ; 2, Grosvenor Museum. (211–12)

12.—LEG X]X V $\overline{\text{DE}}$ within ansate border. The use of DE (= *Devae* or *Devensis*) is discussed by Haverfield (*Eph. Ep.* ix, 1247 ; *Arch. Camb.*, 1916, p. 232, etc.). Holt : 1 example, from No. 5 (tile) kiln. Chester : not represented at the Grosvenor Museum, but recorded by Watkin (*Roman Cheshire*, p. 118). (176B)

13.—LE]G XX VV within ansate border. Of same type as last, but the full title of the Legion is given, and the D,

[1] The stamp from Holt in the British Museum (*Guide to Roman Britain*, Fig. 14) is either of this type or a variant, in which the ansated ends are not connected with the horizontal bars enclosing the legend.

though reversed, is not ligatured to the E. Holt : 7 examples (173 from No. 4 (tile) kiln, 172—No. 3 (tile) kiln.) Chester : recorded by Watkin (*Roman Cheshire*, p. 118) but not in Grosvenor Museum. (172–6A)

14.—LEG XX VV/S VB LOGO PR in two lines within ansate border. The meaning of the second line is uncertain, but the following alternatives are suggested by Haverfield : SVB L. O. G. O(PTIONE) PR(INCIPIS) or SVB LOGO PR(AEFECTO), L.O.G. being in the one case the initials, in the other the name, presumably of the officer in charge of the works-depôt. There appears to be two varieties of this stamp, the chief differences being in the second line. The second variety (not illustrated, and represented only by fragments) has better-formed letters (compare the fragment figured by Palmer, *Arch. Camb.*, 1906, p. 231, Fig. 5) in the second line, and there appears also to be a stop between the second O and the P. This would seem to favour the second reading given above, but the " stop " may perhaps be due to accidents of stamping, and no example is complete enough to judge. Holt : 9 examples in all. Chester : 1, Watkin, *Roman Cheshire*, p. 119 ; 2–4, Grosvenor Museum, all incomplete. (234–41)

15.—LEG XX $\overline{\text{VA}}$ V within rectangular label. Presumably the ligatured VA = *Valeria*. For a slight variant *see* Newstead, *Records*, Pl. III, No. 2. Holt : 1 example (two stamps on same tile). Chester : not represented, except for variant quoted. (112)

16.—IVLIVS. Holt : 2 (fragmentary). Chester : 1, Grosvenor Museum (Haverfield, *Cat. Inscr. Stones*, p. 88, No. 203—Same fragment figured by Watkin, *Roman Cheshire*, p. 120). Meaning uncertain, and it is impossible to judge how much of the stamp is missing. The name may be that of the officer in charge of the works, who directed the production. (209–10)

17.—LEG XX VV within square label. Leaf-stops separating numeral from remainder. Holt : 4 examples. Chester : not represented (Grosvenor Museum). Tiles bearing this stamp were found at Holt by Crue *c.* 1600 (see refs. above p. 4), and what is probably the same type is recorded from Chester (Bridge Street) in 1630 (Watkin, *Roman Cheshire*, p. 117). (177, 182, 184, 188)

18.—LEG XX VV within ansate label. Holt : 2 examples. Chester : not represented. Stamped on same tile over a poor impression of No. 7, and therefore contemporary with it. (216, 232)

19.—LEG XX VV within ansate border. Incomplete. Holt : 1 example. Chester : may be represented by fragments, but uncertain. (227)

20.—LEG XX VV within double rectangular border with tags at corners. A border of dentures around outer edge of stamp. Holt: 1 example. Chester: not represented. (203)

21.—LEG XX[ . Incomplete. Holt: 1 example. Chester: not represented. (241B)

22.—LEG XX[ . within rectangular border. Incomplete. Holt: 1 example. Chester: not represented. (186)

23.— ]G XX VV. Incomplete. Holt: 1 example. Chester: not represented. (179)

24.—L]EG XX. Incomplete. Holt: 1 example. Chester: apparently not represented. (207)

25.—V]V̄A. Incomplete. Holt: 1 example. Chester: not represented at the Grosvenor Museum, but what may be the same type is recorded by Haverfield (*Arch. Camb.*, 1916, p. 232, v). Apparently one of the *Antoniniana* class of stamps, which, though recorded several times at Chester is not otherwise represented now in the Holt collection (but see below). Mr. S. N. Miller, in the latest discussion of the titles (*Archæologia*, 78, pp. 159–60) dates the period of its greatest use by the legions as 212–22 A.D. It is stated that the title was used in an exceptional case under Antoninus Pius (138–161). But up to 211–12 only six instances of its occurrence are known, and then only in connexion with auxiliary troops. On the death of Geta (212 A.D.) the title came to be applied, under Caracalla, to a large number of units of different classes, including the legions. It continued until the death of Elagabalus in 222, but was abolished, or frequently replaced by Severiana, etc., under Severus Alexander (222–35 A.D.). The Holt stamp, therefore, probably belongs to the period 212–22 A.D. (242)

26.—]XX VV. Incomplete. Holt: 1 example. Chester: not represented. (241A)

27.—LEG XX. Retrograde stamp in square label. Holt: 1 example. Chester: not represented. (192)

28.—LEG XX VV. Retrograde stamp in label with indented ends and zigzag decoration along long side. Holt: 2 examples. Chester: not represented. (202, 204)

29.—LEG XX[ Retrograde stamp in rectangular label. Incomplete. Holt: 3 examples. Chester: not represented. (189, 193, 193A)

30.—(Fig. 60, 3) LEG XX VV in square label. Holt: 1 example. Chester: not represented. (768)

*Not Illustrated.*

The following stamps are recorded as having been found at Holt, but are no longer represented in the Holt Collection:

31.—LEG XX V̄A Also at Chester. Haverfield, *Eph. Ep.*, ix, 1272; *Arch. Camb.*, 1916, p. 232, etc.

32.—]PREF LEG XX[. Incomplete. Found at Holt, 1912. Haverfield, *Eph. Ep.*, ix, 1275A, p. 648, etc. *Cf.* No. 14, above.

33.—]ANTO. Incomplete. At Holt and Chester. Newstead, *Records*, pp. 65–6.

## 9. Pottery.

### (i) Coarse Pottery.

In this section an attempt has been made to illustrate fully the range of forms and periods represented by the Holt coarse pottery, as far as it is now available for examination. In some respects it is likely to be incomplete. Apparently at the time of discovery the necessity for preserving a fully representative series was not properly realized, and in the interval further gaps have appeared. Here as with other finds, the almost complete absence of labelling is the cause of two handicaps. In the first place, the vast quantity of material is useless for dating individual structures or periods. Secondly, lack of evidence of association or stratification (where any existed) makes it impossible to apply the chronology of the site to the types and techniques which were manufactured on it. Some of the gaps are filled by the valuable, though limited, evidence of the Chester deposits, in which material of Holt provenance is frequent, though not always datable.

On the other hand, allowing a reasonable margin for local variations, the evidence provided by definitely dated analogies on other sites gives a consistent picture, chronologically speaking. It suggests that, while individual forms which were formerly present are now missing; on the whole the series represents with fair general accuracy the range of date of the Holt products.

The information provided by the dating may be taken first. Its implications are dealt with elsewhere (above, p. 47). The abundance of second-century, and particularly of late first–early second-century, forms may be noticed.

Thus the hooked rim mortarium (first–third century) far outnumbers the flanged and hammer-headed varieties (third–fourth century). The ollae include much rusticated ware, barbotine-decorated wares, and other early forms, one or two of which show native influence. The second-century forms of the cooking pot undergo little change throughout that period (below, p. 149). But the developed fourth-century form is wanting, and the second-century types are far more abundant than the few transitional rims which may be dated broadly

to the third century. Bowls, jugs and plates tell the same story—a strongly-marked numerical superiority of forms of recognized late first–early second-century date over later vessels, many of which (such as the fumed ware "pie-dish" types, 139, etc.) occur over a wide period, and cannot be closely dated. At the same time, later second-century types, though not so abundant, occur in some quantity, and indicate an occupation lasting throughout that period and into the third century. But for a full discussion of all the evidence see above, pp. 47 ff.

Among the fabrics far the commonest is the ordinary tile-red or buff ware, sometimes white-slipped. In its best quality, as represented by certain of the flanged bowls (80-89, etc.) and also by some of the store vessels (*e.g.*, 57, 66-7, 70) this ware is hard and of fairly smooth surface, with a somewhat glass-like fracture. But much of the Holt pottery is undoubtedly below standard, soft and coarse in texture, and containing a large quantity of quartz-like material, due in part, perhaps, to the uneven mixing in of "grog" to increase the refractory powers of the clay, perhaps also to faulty levigation. Plain grey ware, on the other hand, is comparatively rare. At its best this is also hard and smooth, with the sharp fracture of the buff and red ware types (75 and 76 are good examples).

Two other types of ware are of finer quality and of more limited date. The first of these is a hard dark red ware. In many cases it appears to be slipped with a very fine smooth but unburnished slip of the same material. White-slipped, it was used for screw-neck and other early types of jugs. Unslipped, it occurs in early types of mortaria (particularly the special group, 5–8) on some of the smaller forms, and on one or two single types all of which appear to be no later than the early part of the second century.

The second of these fine wares is of somewhat similar character. The ware itself is buff, with a buff slip which is generally highly burnished, and of smooth soapy texture. This ware is the Holt counterpart of the so-called "legionary ware" of Caerleon (*Caerleon Amphitheatre*, p. 178), and in other respects it shows similar characteristics, as in its precise modelling and the imitation of metal and Samian forms. It occurs also in connexion with the smaller classes of pottery (p. 164) frequently being unburnished, but with a very smooth hard surface. "Legionary ware" at Caerleon is well dated to the reign of Hadrian, but at Holt and Chester the scantier material does not allow its date to be so closely fixed. The forms on which it occurs, however, are all of fairly early type, and like the last, it is not likely to be later than the early part

of the second century. Further evidence will probably narrow its limits. The term " legionary ware ", however, is something of a misnomer at Holt. Though distinctive and easily recognizable, it was only one of many types of ware produced there. As far as can be judged it is much less frequent at Holt than at Caerleon, and the dark red ware already described seems to be of much commoner occurrence. Besides these distinctive fabrics, there are also a number of other less common types in buff and other ware. Slips and slip-decoration used at Holt are as found elsewhere, except for an imitation Samian slip of red or brown-red colour, applied apparently with a brush. It was used on a number of the imitation Samian forms, as well as on the stamped ware (below, p. 179), and frequently occurs on ware in which an attempt has been made to attain the characteristic Samian " body ".

The two fabrics in red and buff ware were also those largely used for the small vessels in fine pottery (175-92), except that the highly burnished soapy surface of the buff ware is less frequent. Eggshell ware is discussed below (p. 163). Its occurrence in fair quantities at Caerleon, and the fact that similar ware has been recorded at York, suggests that eggshell ware was regularly included in the products of the legionary potteries down to the early second century.

A survey of the forms used witnesses to the essentially Roman—as distinct from Romano-British—character of the site. The forms in fact provide the sole clue to the character of the personnel of the works—as to whether the potters were men trained in Roman methods, or native potters working under Roman direction and according to Roman ideas.

In the latter case, some indication of native influence might perhaps be expected to appear in the forms produced. But there are very few such indications. Out of some 240 types, less than ten show any sign of native ancestry. On the other hand, with few exceptions the forms are all those of the stereotyped, essentially practical and generally inartistic vessels which are characteristic of Roman military sites wherever they occur. There is a complete absence of those " native " features, variety of form and treatment, a fine sense of the value of line and space in ornament, which characterize the productions of the Romano-British potteries of Castor and the New Forest. The Holt potters were men of limited range. Their practical skill in the production of fine wares, such as eggshell, on the one hand, and of larger vessels and building material on the other, was rarely accompanied by any artistic perception ; and their wares impress by their obvious suitability for practical use, and mastery of the technical aspects

of pottery production. When they departed from the purely practical they were obliged to turn to the Samian potter and to the glass- or metal-worker for ideas which they transmitted to coarse pottery. Sometimes, indeed, the original goes through such modifications as to produce an almost new form ; but the modifications rarely, if ever, add to the artistic quality of the original. The same applies to many of the decorative motifs (see the stamped ware, below, p. 179, etc.) and to the human heads used for pottery decoration (*e.g.* Fig. 57). The treatment and derivation of these is in all cases " classical ", and the evidence of the pottery taken as a whole shews that the potters, if not Italian by race, were at any rate men in whom the process of Romanization had reached a high pitch, to the exclusion of almost all non-Roman ideas and traditions.

In the accompanying catalogue the pottery is listed generally according to form, and most of the important varieties are figured. The approximations to each form are listed under the same number.

For works of reference and abbreviations used, see p. 85.

### *Mortaria* (Fig. 61).

The great majority of the mortaria-rims belongs to the hooked or bead and flange type, and most of these appear to be of local manufacture. The later forms are rare : the flanged type is represented by one example, and the hammer-headed by five, thus showing a decided predominance of second-century forms. The commonest ware is buff or red, occasionally with white or self-coloured slip. White ware is rarer and is probably not of Holt manufacture.

1.—Good buff ware. Broad flat rim with well-moulded bead. Akin to Bushe-Fox's early types 10–18 (*Wroxeter*, i, pp. 76–7) which are well recognized as of late first-century date. (575)

2.—Red ware with remains of red slip. Slight offset below inner edge of rim. Of the same type as 1, but perhaps more closely related to types 4–8 below. (555)

3.—Hard red ware with red slip on the upper face of flange. *Cf.* Wroxeter type 14 (late first century). (560)

4.—Soft buff ware. Flat heavy rim, with slight groove below a somewhat angular inner edge. Related to types 5–8 below. (571)

5–8.—A group all showing similar features : good dark red ware, with slip of same material, with an angular groove below the inner edge of the rim, which is in all cases more or less angular in section. 7 is unusually small. The ware and

flat rims suggest an early date for the group, which is unparalleled elsewhere, except at Chester. There rims of similar type and identical ware are dated late first century (Newstead, *Records*, Pl. XXIII, 3, 4). (564–7)

(*Not illustrated.*) Three large rims somewhat resembling No. 4 in having a flat rim with a more or less pronounced groove just below the inner edge. (581)

9.—Red ware. Slightly hooked rim, with shallow groove near inner edge. *Cf.* 10. (559)

10.—Buff ware. Similar to last, but with more pronouncedly hooked rim. Late first–early second-century types. (558)

(*Not illustrated.*) Group of ten rims with bead level with top of curve as Wroxeter types 22–30 and variants. One or two examples resemble 10. (579)

11.—Buff ware. A heavy rim akin to Wroxeter types 22–30, dated at Wroxeter and Corbridge to late first–early second-century. (557)

12.—Hard red ware. A weakly modelled rim with a somewhat square-sectioned bead. Akin to Wroxeter types 54, 58, dated to the end of the first and first half of the second centuries. (576)

13.—Tile-red ware with white slip. As last, akin to Wroxeter types 54, 58. Similar types lasted into the Antonine period (*Balmuildy*, Pl. XLI, 7, 17). (770)

14.—Buff ware. Hooked rim with small bead below top of curve. *Cf.* the first–second-century types Wroxeter 34, etc. (577)

(*Not illustrated.*) Group of fourteen rims showing same general character as last. Sizes and fabrics vary considerably. A white slip-coating is sometimes used. (578)

15.—White ware. Broad somewhat flattened bead well below top of curve. For similar rims of second-century date *cf.* *Forden Gaer*, ii, Fig. 18, 3–4. (573)

16.—Red ware. Bent-over rim with bead well below top of curve. *Cf.* Wroxeter type 46. The type had a long life: a group at Gelligaer shows that the bent-over rim was already fairly common at the beginning of the second century, and the same type occurs in Antonine deposits at Newstead (Curle, *Newstead*, Fig. 34, 11, 12). (554)

17.—Grey-white ware. Large hooked rim with internal bead below top of curve (Wroxeter type 38—80–110 A.D.). Stamped MATV/ GENVS FECIT. MATVGENVS is a well-recognized late first–early second-century potter. His stamps occur on types 34 and 38 at Wroxeter (*Wroxeter*, i, p. 66) dated probably 80–120 A.D. (553)

18.—White ware. Flattened bead rising above sloping, slightly bent rim. Apparently unparalleled. (772)

19.—Good buff ware. Prominent bead, rising above rim. A common late second–third-century type : it was the commonest in the Antonine fort of Balmuildy (*Balmuildy*, Pl. XLI, 22–24). (572)

20.—Coarse tile-red ware with remains of red slip. Flat poorly modelled rim with prominent bead, which, taken in conjunction with the weakly moulded spout and coarse fabric, suggests a late date. (561)

21.—Soft buff ware. Prominent bead, with bent-down rim. *Cf.* Wroxeter types 102, 106 (late second–third century) and *Balmuildy*, Pl. XLII, 34. (562)

(*Not illustrated.*) Group of nineteen rims with bead more or less prominently set above curve. One or two examples have the bent-down rim of 21. This group includes some very large and heavy vessels, the internal diameter of one complete example being 13 inches. On some of these a roughly incised panel of lattice-pattern (in one case with ansate ends) on each side of the spout is apparently intended to imitate the potter's stamps. The very large size of some of these mortaria suggests that they were not made for domestic use, but possibly for manufacturing purposes (*e.g.* in the preparation of the slips, etc.). (580)

22.—Coarse red ware with remains of red (hæmatite) slip. Prominent bead, with hollow on internal wall below, and single groove near outer edge of flange. Wroxeter types 70–8 show the same features without the prominent bead, and the hæmatite wash is also constant. The initial date is given as the end of the first century. An example at Chester resembling the Holt specimen was found with another mortarium of Wroxeter type 62 dated at Poltross Burn 120–180 A.D. (Newstead, *Deanery Field*, i, p. 70). (563)

23.—Coarse red ware. A weakly modelled rim for which no parallel appears to be available. (574)

24.—White ware. A solitary specimen of the flanged type. Rather badly damaged, so that its original form is not altogether certain, but *cf. Richborough*, i, 97–100, dated late third–fourth centuries. The type made its appearance as early as the beginning of the second century (*Gelligaer*, Pl. XI, 1), but its general incidence in Britain is in the later periods of the occupation. (771)

25–7.—Three of five examples of the hammer-headed mortarium, all of white ware with black spar on the interior, 27 also having brown zigzags painted on the rim. The greatest incidence of the hammer-headed type seems to date from the

second half of the third century, and to last well on into the fourth. The date of its first appearance is somewhat uncertain, but was probably quite early in the third century. Hammer-headed types are not found in the Antonine deposit at Newstead. They occur only rarely and in undeveloped forms at Balmuildy. Forms more definitely transitional to the hammer-head than those at Balmuildy, however, occur in the late second-century deposit at Corbridge (*Corbridge*, 1911, Figs. 104–7 ; *cf.* also *Caerleon Amphitheatre*, Fig. 22, 76, *c.* 200 A.D.). At the Forden Gaer, on the other hand, they occur in developed form in period 2 (*Forden Gaer*, ii, Fig. 18, 11–15), but while this period of the occupation was prolonged beyond that of Balmuildy, its terminal date has yet to be determined. (568–773)

*Ollæ*, etc. (Figs. 62–4).

As with the mortaria, demonstrably late (third–fourth century) types are rare. There is a quantity of "rusticated" ware of late first–early second-century date, with other forms characteristic of the same period. Red or buff ware store-vessels are also common. Second-century varieties of the fumed grey-black ware cooking-pot are represented in quantities, and the few later forms present occur in this technique, with the addition of one or two imitations in Holt fabric.

28.—Light grey mica-coated ware. Decorated around body with rubbed lattice in wide lines. From No. 6 kiln. (621)

29.—Hard red ware, with self-coloured slip. Carelessly executed rubbed lattice, and girth-grooves on shoulder. (623)

30.—Badly levigated grey ware, with grey slip. A waster, warped and overfired. (635)

31.—Coarse dark grey ware. Like the last, a waster owing to overfiring. The form suggests third-century date (*cf.* 42, below). *Cf.* 75–7 below for the sharper modelling arising from the copying by the legionary potters of the "native" form. (636)

32–44.—Cooking-pots, all of fumed grey-black ware, with burnished sides and rubbed lattice. A representative series of the type. The profiles appear to range from the second century well into the third. The commonest forms (33, 35, 38, 39) are of second-century date, and can all be paralleled on sites occupied during the second century, both in the pre-Antonine and in the Antonine periods (*cf.* Wheeler, *Brecon Gaer*, C 42, 43 ; *Balmuildy*, Pl. XLV ; *Corbridge*, 1911, Pl. XII, 46, etc.). The form underwent little change during the second century, as a comparison of the series quoted illustrates. Other forms, less common, belong to the same period (32, 34, 40). The develop-

ments which the forms underwent mainly during the third century are represented by single examples : 41 shows a broad everted rim which does not yet overhang the bulge, while in 42 (*cf.* 31 above) and 43 the overhang is more pronounced, but does not attain that of the characteristic fourth-century olla (*cf.* the well-known Hambleden example—*Archæologia*, 71, p. 181, 163). Typologically, 43 is the latest in the series ; but close dating of these third-century types is impossible on present evidence. The following list gives the numbers representing each type :

32.—Two examples. (622 a–b)

33.—Nine examples, four with zigzag on collar (see below, 35). (624 a–i)

34.—Single example. (629)

35.—Three examples, all with zigzag on collar. This feature is regarded generally as belonging to the first half of the second century. But at Balmuildy it occurred commonly on the cooking-pots (*Balmuildy*, p. 86), while at Chester, Prof. Newstead informs me, it is frequently found on pots of Antonine date ; so that it must have survived into the Antonine period in many places. (627 a–c)

36.—Two examples, both with zigzag on collar. (628 a–b)

37.—Single example. (631)

38.—Nine examples, one with zigzag on collar. (625 a–i)

39.—Seven examples. Three have the zigzag, but in several cases it is difficult to judge, owing to the burning away of the burnished surface. (626 a–g)

40.—Two examples, both with zigzag. (630 a–b)

41, 42.—Single examples. (632, 633)

43.—Three examples. (634 a–c)

44.—Light grey ware, with traces of lattice-pattern. Second–third century. (637)

45.—Unevenly fired buff ware. A weakly modelled and poorly proportioned example. (639)

46.—Good grey ware. Neck and body demarcated by a slight rounded offset. Probably late first–early second century. (650)

47.—Good light grey ware. Two slight constrictions on shoulder. Though not closely paralleled the form shows native influence, and is probably of late first–early second-century date. (652)

48.—Good red ware with remains of red slip. A well made olla with two girth-grooves on shoulder. Like the last this form is not closely paralleled, but shows marked native influence which dates it probably to the end of the first or early part of the second century. (651)

49.—Grey ware with black slip. Raised cordon below neck, with barbotine decoration of white dots which were probably originally arranged in rectangles, but many of them have peeled off. One of the class of "poppy-head" beakers. This type lasted longer than the majority of the barbotine-decorated wares (as 51–3), which do not seem to outlast the first half of the second century, and is found in Antonine deposits (*e.g. Richborough*, i, p. 98, 54). See also *Wroxeter*, ii, pp. 49–50, and Pl. XV, 11, 13. There are also fragments of the same type in grey ("Upchurch") ware. (655)

50.—Thin red ware, mica-dusted. Three girth-grooves below rim and decoration consisting of raised bosses (formed by pressing the wall from within into a hollow tube held against the exterior) arranged in triangular groups. Several of the type occurred at Wroxeter, one figured which closely resembles the Holt specimen being dated 80–120 A.D. (*Wroxeter*, ii, p. 52, 59). A fragment showing the same decoration occurred at Chester in a late first-century deposit (unpublished—information from Prof. Newstead) and it was also found at Caersws (in National Museum of Wales). The type is not common, and all these examples may well be of Holt manufacture. An urn at Wilderspool shows the same bosses in conjunction with frilled cordons and painted decoration (May, *Roman Warrington*, p. 60), while at Faimingen the same device alternates with a mask surrounded by bosses (ORL, *Faimingen*, Pl. XI, 40). (657)

51–2.—Ollæ of grey ware with barbotine decoration of irregular vertical lines. This type of decoration dates generally to the late first–early second centuries (see reference under 49). The varieties in which it occurs are represented by many fragments at Holt (particularly of types *Wroxeter*, ii, Pl. XV, 1–5). (654)

53.—Grey ware. Barbotine decoration of scrolls and dots. See 51–2 above. (653)

54.—Good thin brown ware. Barbotine decoration of white circles, with cordon above and groove below. A number of fragments of similar type. The same decoration has occurred at Chester. Late first–early second century. (656)

55.—Good white ware. A well made vessel with barbotine decoration of brown rings in vertical lines. A close parallel at Chester is dated late first century (Newstead, *Deanery Field*, ii, Pl. XIII, 11a). (656)

56.—Hard red ware. Single girth-groove on shoulder. Same type as *Wroxeter*, i, 33, etc., dated 80–110 or 120 A.D. Three examples. (682 a–c)

57–60.—Red ware ollæ of late first–early second-century type. *Cf.* the Corbridge group, *Corbridge*, 1911, Pl. XI, 14–16. (689, 683, 688)

61.—Red ware. Jar of similar type to 70 below. Six similar rims. (684 a–f)

62–7.—Rims of ollæ or store-vessels of red or buff ware, of first–early second-century types. Each type is represented by from one to four examples, and examples similar to 66 particularly have occurred at Chester in late first-century deposits. (684–6, 690–1, 693)

68.—Buff ware. Olla of second–third-century type. Two examples. (694 a–b)

69.—Tile-red ware. Double-handled "honey-pot". Similar type to *Wroxeter*, ii, 48 (dated 80–120 A.D.) but somewhat later in form. According to the Colchester grave-groups this and similar types lasted from *c.* 50 to 150 A.D., and the size and form of the handles generally give an indication of date, the larger handles being the earlier (Hull, *Colchester Museum Report*, 1928, p. 26, No. 6847.27, and p. 56, No. 7092.27). One other example, of similar type, in red ware with white slip. (681 a–b)

70.—Tile-red ware. Store-jar or honey-pot, probably originally handled. Like the last, this and other types of wide-necked jars and ollæ belong particularly to the second half of the first and first half of the second century, after which date they were more and more replaced by the grey-black fumed cooking-pots.[1] *Cf. Colchester Museum Report*, 1928, Pl. XVII, No. 5681.27, a slightly earlier form dated 50–100 A.D. (684 i)

71.—Tile-red ware. The generally similar type of ware in all these store-vessels is another indication of similar date. Four examples. (684 j–m)

72.—Buff ware. Two-handled olla with sharply moulded lip. Second century. (687)

73.—Red ware with self-coloured slip. Urn with frilled collar. An unusual form. Frills occur on urns and other vessels of all periods, and do not allow of close dating. (695)

74.—Hard red ware, slightly warped from overfiring. Store-vessel with deeply-grooved rim to take lid. *Cf. Corbridge*, 1911, Pl. XII, 67 (late second century). (956)

75.—Hard grey ware. Handled beaker with rubbed lattice decoration. Later than the Brecon example (*Brecon Gaer*, C61) which shows a more rounded profile, and more like Antonine examples such as *Balmuildy*, Pl. XLVI. *Cf.* also

[1] At Balmuildy, for instance, the grey-black cooking-pot far outnumbered all other olla-shaped vessels (*Balmuildy*, pp. 85 ff.).

Curle, *Newstead*, p. 256, 31 (140–80 A.D.), and Newstead, *Records*, Pl. XVII, 10 (150–200 A.D.). From No. 6 kiln. (641)

76.—Hard grey ware. As last, but without handle or decoration. One other example from No. 6 kiln. (642 a–b)

77.—Fumed grey-black ware. Similar form to 75 and 76, but the different treatment of the same form in the sharper modelling of the Holt product may be noticed (*cf.* 31 above). Three examples. (640 a–c)

78.—Soft grey ware with remains of grey slip. Two grooves on collar and one on shoulder. *Cf.* the Balmuildy group, *Balmuildy*, Pl. XLVI, 8–11, and p. 88. (643)

79.—Buff ware. One of a group of five beakers with a similar type of everted rim (restored in the drawing from another example). *Cf. Forden Gaer*, ii, Fig. 20, 17–20 (not dated, but presumably second century). No. 6 kiln. (649 a–e)

*Bowls* (Figs. 65–6).

The most characteristic bowl was of the flanged and carinated variety. Thirty-eight definite examples are represented, but there were many fragmentary rims and bases which probably had belonged to the same form, which must have been one of the most commonly manufactured types at Holt. It is generally recognized as being of late first–early second-century date, and its occurrence in Antonine deposits is rare (*e.g.* two examples at Balmuildy, *Balmuildy*, p. 90), but features of constant value for closer dating are hard to fix. At Caerleon Amphitheatre the angle formed by the flange with the shoulder of the bowl provided this feature, obtuse-angled flanges being dated from *c.* 110 A.D. (*Caerleon Amphitheatre*, p. 180). At Holt the obtuse angle occurs only with plain-rimmed varieties, never being found with reeded rims; but in the general lack of evidence of stratification its value for dating purposes is uncertain. It may be observed, however, that the plain-rimmed bowls are generally of poorer workmanship, both as regards form and fabric, than the reeded acute-angled rims. The type, particularly in its more angular varieties, is well represented at Chester in pre-Antonine deposits. For the "pie-dish" types which replaced these carinated bowls, first becoming really common in the Antonine period, see below, 139, etc. Other forms are represented mainly by single examples.

80.—Buff ware. Acute-angled reeded rim, slight carination, with two girth-grooves. The largest size. Two examples. (584 a–b)

81.—Creamy ware. Acute-angled plain rim, with slightly marked carination. Two examples. (587)

82.—Coarse buff ware. Slightly obtuse-angled plain rim, with fairly well-marked carination. Eleven examples. The plain rim and coarser workmanship of this type may perhaps be regarded as supporting a late date for the obtuse-angled rim (see above). (586 a–j)

83.—Good buff ware. Acute-angled reeded rim with strongly marked carination. Single example. (588)

84.—Good buff ware. Acute-angled reeded rim with single groove above blunt carination. One of three small examples. (591 a–c)

85.—Buff ware. Slightly acute-angled reeded rim with blunt carination, and slightly marked foot in place of the ordinary "cut-away" type. Eight examples show a similar profile, without the foot. (590 a–g)

86.—Coarse buff ware. Acute-angled reeded rim with blunt carination and two pairs of girth-grooves. Six examples. (585 a–c)

87.—Coarse buff ware. Acute-angled reeded rim, with curving wall and single wide girth-groove. Single example. (583)

88.—Coarse buff ware. Horizontal reeded rim, with curving wall and double girth-groove. Three examples. (589 a–b)

89.—Coarse tile-red ware. Grooved rim in place of flange, and slightly marked carination. From the main flue of the double-flue kiln. (582)

90.—Hard grey ware. Wide reeded flange, and wide shallow girth-groove above blunt carination. *Cf. Caerleon*, i, Fig. 32, 79 (Flavian) (727)

91.—Good red ware. Bead rim, with small foot and well formed foot-ring. Four examples. (721 a–d)

92.—Coarse grey ware with brown core (? a waster). Carinated bowl with bead-rim and raised foot stand. *Cf. Richborough*, i, 23, dated late first–early second century. (726)

93.—Good brown ware. Round-bottomed bowl, the lower part decorated with regularly spaced grooves. The roll-rim and plain zone between it and the grooved portion recall Drag. 37. An unusual form not apparently paralleled elsewhere. (723)

94.—Grey ware. Carinated bowl with band of rubbed lattice-pattern on shoulder, demarcated above and below by wide girth-grooves. An unparalleled form. (725)

95.—Pinkish-buff ware. Bowl with everted rim, the upper wall thickened and overhanging the lower. Perhaps an imitation of the Samian form Walters 81—*cf. Richborough*, i, 108 ("probably late third or fourth century"). (725)

96.—Grey ware. Small hemispherical bowl with simple rim and two girth-grooves below. The feeling of this vessel resembles that of a dish at Wroxeter (*Wroxeter*, ii, 68) dated late first–early second century. (729)

97.—Light buff ware. Two external grooves below rim, a slight offset on wall, and a deep groove in foot-ring, with a pronounced mammiform projection on the internal base. An unusual form. (722)

*Lids* (Fig. 66).

A series of five lids illustrating the range of sizes and forms, except for two fragmentary examples considerably larger than 102, and a small group (see below, 192). Out of many fragments, only 15 examples give a complete section. Lids do not allow of close dating on form: the commonest forms are 101 and 102; but they are grouped below according to size.

98.—Grey-brown ware. From No. 2 kiln. Two others of same size in red ware. (696)

99.—Tile-red ware, ? mica-coated. Two others of same size in red ware. (696)

100.—Fumed grey-black ware, with rubbed zigzags on underside, and burnished upper surface. The only lid in this technique. One other of same size (red ware). (696)

101.—Grey-brown ware. Three of approximately the same size and form, all in red ware, one with remains of white slip. (696)

102.—Buff ware. Single example. (696)

*Jugs, Flagons, etc.* (Figs. 67–8).

Amongst the jugs the commonest was the screw-neck type. In the series of 27 necks of this form the majority show the four or five rings characteristic of the late first and first half of the second century. Later forms of the same type are present, but in much smaller numbers. Other varieties, some of unusual occurrence, are represented mainly by single examples.

103, 104.—Examples of the five-ringed mouthpiece type. The ware of these is uniformly of good quality, dark red with white slip. Three-ribbed handles. Thirteen examples. See 105 below. (592, 593, 595)

105.—Tile-red ware with creamy slip. Four-ringed mouthpieces and two- or three-ribbed handles. Six examples. Types 103–5 are of common late first–early second-century type. Definitely first-century jugs generally have a more angularly bent handle, while the mouthpiece also shows a less funnel-like

spread. For this Flavian type see the Corbridge example (*Corbridge*, 1911, Pl. XI, 1; also Curle, *Newstead*, Fig. 33). The present forms are more akin to *Wroxeter*, i, Fig. 17, 1–3, and Wheeler, *Brecon Gaer*, C34 (in group dated 100–140 A.D.). (594, 596)

106.—Red ware with white slip. Four-ringed mouthpiece and two-ribbed handle. Five examples, one in white ware. The short curved neck and weakly modelled rings with slightly cupped mouth indicate a later date than the preceding. *Cf.* May, *Carlisle Pottery*, Pl. X, 131a, b; and for a similar Antonine modification, *Balmuildy*, Pl. XLIII, 5. (597)

107.—White ware. A small example, which is also the latest in the series. The neck fades weakly into the body, the rings have become featureless, and the curve of the handle much flattened. The dating of such decadent types on form alone is difficult, but in the Holt neck the process of decline has advanced further than in the Antonine form at Balmuildy quoted under 106. Single example. (598)

108.—Red ware (? with red slip). A jug which falls outside the above series, both in fabric and form. Long neck, with imitation of the ringed mouthpiece, but with the moulding of the rings replaced by three narrow grooves. No exact parallel can be cited, but the weakly bent handle, attached to the base of the neck without regard to the distribution of the weight, indicates a late date; and the vessel may belong to the class of third-century revivals of early forms associated with new features described by Wheeler (*Caerleon Amphitheatre*, Fig. 21, 58). (599)

109.—Buff ware with buff slip. One of four examples of small jugs in buff or red ware. (607)

110.—Hard red ware with creamy slip. Conical mouthpiece. Fabric suggests same date as 103–5. *Cf. Wroxeter*, ii, Fig. 18, 47, dated to same period (late first–early second century). The moulding is less sharp than in first-century examples such as *Richborough*, i, 38. Single example. (608)

111.—Coarse red ware. Four-ribbed handle. This type occurs at Chester (Deanery Field) in late first-century deposits. Single example. (600)

112.—Buff ware with remains of white slip. Three-ribbed handle. A similar but earlier form is figured in *Colchester Museum Report*, 1927, 5373B. The neck of the present example is short and slightly concave, but the moulding is good, and it is hardly later than the first half of the second century. Single example. (601)

113.—Hard red ware with remains of white slip. Three-ribbed handle. Same type as Newstead, *Infirmary Field*, ii,

Pl. VIII, 10, in a deposit dated late first–early second century. Single example. (602)

114.—Red ware with creamy slip. Two-ribbed handle. Ring-mouthpiece, with pronounced step. An apparently similar but earlier form from Wilderspool is figured by Thompson Watkin, *Roman Cheshire*, p. 267. The short concave neck merging gently into the body shows the Holt vessel to be more akin to late second-century forms such as *Balmuildy*, Pl. XLIII, 8, or the series figured in the group of that date at Corbridge (*Corbridge*, 1911, Fig. 8, 92, etc.). Single example. (604)

115.—Good buff ware with white slip. Two-ribbed handle. Simple ring-mouthpiece, with single groove on underside. Two grooves on neck. Single example. (603)

116.—Hard grey ware. Jug with semicircular horizontal spout. For a somewhat similar form *cf.* May, *York Pottery*, Pl. XV, 13. Single example. (606)

117.—Tile-red ware. Jug with pinched-in spout. *Cf.* early second-century examples in legionary and other ware at Caerleon (*Caerleon Amphitheatre*, Fig. 21, 57 ; *Caerleon*, i, Fig. 31, 53–4). Six examples. (605)

118.—Good red ware. Single-handled barrel-shaped flagon. For a discussion of these barrel-shaped vessels see Oelmann, *Niederbeiber*, pp. 42–3 (type 35). The immediate prototype is the first-century glass vessel (such as Ludowici, iii, Fig. 22) of which pottery copies were produced at Cologne, where the copying of glass and metal originals was a feature of the local potteries. Samian and other industries in due course followed suit. Other fragments, the complete forms of which are indeterminate, represent the same or similar types at Holt (see also below, 188) and it has occurred in undated deposits at Chester, in some cases in mica-coated ware, a technique generally regarded as not outlasting the early part of the second century. The other Holt fragments are in red ware with white slip. (605

119.—Buff ware with burnished buff slip. Cylindrical single-handled flagon. The ware is of the so-called " legionary " type (see above, p. 144). The form itself does not appear to be closely paralleled, but with a variation in the mouthpiece somewhat resembles that of the Niederbeiber flagon type 63 (Oelmann, *Neiderbeiber*, Pl. III, and p. 59). One other fragmentary example of the same form. (611)

120.—Orange-buff ware with remains of orange slip. Mouth and handle missing, with remains of applied heart-shaped ornament at the junction of the latter with the wall. A copy of the bronze ewer as Curle, *Newstead*, Pl. LXI, a form which was

frequently imitated in pottery. *Cf.* May, *Carlisle Pottery*, Pl. XIII, 177 and *York Pottery*, Pl. XVI, 2, the latter a more elaborate form. Also 121 below. (614)

121.—Buff ware with burnished buff slip (as 119). Mouth and handle of jug of similar type to last. Fragments representing five other examples, in the same type of ware. For similar (second century) imitations of the metal form in the "legionary" ware of Caerleon see *Caerleon Amphitheatre*, Fig. 21, 54–5. (One from No. 6 kiln.) (609)

122.—Thick buff ware. Small single-handled jug. Single example. (613)

123.—Soft buff ware. Single-handled flagon. Enough of the turn of the shoulder remains to show that it originally had a cylindrical body. Single example. (612)

124.—Soft yellow buff ware. Two-handled flagon with body tapering gently to a raised foot. The form imitates a classical type, and though apparently unparalleled in this country, is not likely to be later than the end of the first or early part of the second century. Fragment of one other of probably the same type. (620)

125.—Buff ware with burnished buff slip. Like the last, this form is derived from classical sources, and with its long neck and angularly bent handles probably belongs to about the same period. Single example. (619)

126.—Tile red ware. Double-handled flagon. The less globular form of this than of typical late first–early second-century types (such as *Richborough*, i, 40; *Caerleon*, i, Fig. 30, 42, etc.) added to the more concave neck, less pronounced flange, and less angular handles, suggests a date more definitely in the second century than those quoted. Four examples, of which one resembles the earlier form, having a more pronounced flange-rim than that illustrated, with a more globular body and raised foot-ring. Two come from the main arch of the double-flue kiln, with 218 and 231 below. (616)

127.—Hard grey ware. Two-handled flagon with cylindrical cornice-rimmed neck, demarcated from body by a slight groove. The type has also been found at Chester. *Cf. Caerleon Amphitheatre*, Fig. 23, 82 (*c.* 90–130 A.D.). Three other examples in red or buff ware. (617)

128.—Good buff ware. Three-ribbed handles. Lagena with well-modelled cup-mouthpiece and short neck passing smoothly into globular body. Not closely paralleled, but for similar small two-handled vessels *Cf. Corbridge*, 1911, Fig. 8, 91, 93 (second half of 2nd century). The present example is apparently derived from the heavier two-handled amphoræ with cup-mouthpieces and globular bodies of which there are

two from Caersws in the National Museum of Wales. Single example. (618)

*Plates, Dishes, etc.* (Fig. 69).

Commonest among the flat dishes is the simple form reminiscent of the Samian Drag. 32. In the forty examples giving anything like a complete section three main varieties are represented. The first has an "open" round-sectioned rim, while the second has a chamfered outer edge which tends to give the rim generally a somewhat pointed section. Both of these are usually of small or moderate size. The third is generally larger and of coarser fabric, and the rim shows a tendency to turn inwards, a feature which was found at Caerleon (*Caerleon Amphitheatre*, p. 181) to be rare before the second century. But the evidence available at Holt and Chester is not sufficient to decide the chronological value of these variations. At Chester as elsewhere the form occurs commonly in the pre-Antonine periods. Its occurrence on Antonine sites is exceptional.

129.—Good buff ware with buff slip. Open-rimmed type. Eleven examples, all of small or moderate size. (659)

130.—Coarse buff ware. A heavy example of the same type as 129, the latter being of more usual size for the type. (659)

131.—Good buff ware. A small example of the same type as 129. Slight internal offset at base. (659)

132–3.—Yellow-buff and red-buff ware with slips of same material, respectively. Two examples with the chamfered outer edge of the second type. Nine examples in all. (660)

134–6.—All of coarse buff to red ware. Three examples of the large inturned rim type. In 134 the tendency is not so marked as in 136. 135 shows the combination of chamfer and inturned rim represented by four examples. Fifteen examples in all. A solitary example is in grey ware. (661–3)

137.—Good red ware with slip of same material. A variety in which a convex outer wall replaces the bolder sharply cut away profile of the ordinary types. Single example. (664)

138.—Soft grey-white ware. Dish with side-lugs. An unusual form. For somewhat similar lugs *cf.* the flanged bowl, 218 below. (672)

139.—Reddish-brown ware. Straight-sided dish with flanged rim. Nine examples, some in plain grey ware, others in "cooking-pot" ware with characteristic lattice-pattern. Types such as the present had a long life, and are not easy to date closely. Many of them had appeared by the early part of the second century, particularly the flat-bottomed dishes, 140 and 141 (*Gelligaer*, Pl. X, 5; *Corbridge*, 1911, Pl. XI, 11;

Curle, *Newstead*, pp. 258–9). But their occurrence in these early deposits is rare, and they only become really plentiful in the Antonine period, by which time the carinated bowls and dishes with reeded flange-rims of similar technique had died out. See the Balmuildy group, *Balmuildy*, Pl. XLVI. The example illustrated has the more precise moulding characteristic of the plain fabrics when compared with the fumed ware of " native " technique. (671)

140.—Grey-black fumed ware. Flanged dish with rubbed lattice pattern. The bevel at juncture of wall and base is said to be generally a pre-Antonine feature (*Brecon Gaer*, C15). Two examples. (666)

141.—Same type as last, without bevel. As already stated (139 above) this type appears early in the second century, but first becomes abundant in the Antonine period. It had a long life, and cannot be closely dated. Six examples. (665)

142.—Fumed grey-black ware. Flanged dish with grooved rim transitional to 143. Single example. (669)

143.—Fumed grey-black ware. Like 140, this form had a long life. It appears in the early second century (several examples at Gelligaer, *Gelligaer*, Pl. XII, 11) and lasts until the 4th (*Richborough*, i, 121–2). Five examples. (669)

144.—Fumed grey-black ware. Dish with bead-rim and bevelled wall. Single example. (668)

145.—Hard grey ware. Dish with roll rim. Like those already described, this type had a long life, and is not easily dated. It made its first appearance if anything slightly later than the flanged bowls 140–1, but was far commoner than that form at Balmuildy (*Balmuildy*, p. 91). Two examples. (670)

146.—Fumed grey-black ware. Straight-walled dish scored with intersecting arcs on outer wall and irregular scroll pattern on base. Two examples. (669)

147.—Grey ware. Thick flanged rim, with combed zigzags on outer wall. Single example. (679)

148.—Hard red ware. Small dish with slight bead-and-flange rim. Two examples. (675)

149.—Coarse tile-red ware. Internal ledge below rim, both rim and ledge showing a rounded section. For a somewhat similar form *cf. Gelligaer*, Pl. X, 10. The type has been found at Chester (Forest Street, 1929, unpublished) but in an undated deposit. Two examples. (676)

150–1.—Both in buff ware. Dishes with reeded flange-rims. The type belongs to the same period as the flanged and carinated bowls, 80–8 above, *i.e.* late first–early second century. *Cf. Gelligaer*, Pl. X, 8; *Corbridge*, 1911, Pl. XI, 10.

Four examples. One other, not illustrated, is of the plain-rimmed type also figured in *Gelligaer*, Pl. X, 8. (673)

152.—Buff ware. Same type as last, with raised foot-stand. Single example. (674)

*Imitations of Samian Forms* (Fig. 70).

Vessels imitating or derived from Samian originals form a well-marked group. Most of the common types were copied, in some cases with modifications which have resulted in the production of an almost entirely new form (*cf.* particularly 225, 226, below). The ware used is mostly buff or red, the best quality frequently approaching that of good Samian. The partiality of legionary potters for Samian types has already been noticed at Caerleon (*Caerleon Amphitheatre*, p. 178).

153.—Hard buff ware. Imitation Drag. 37, with low foot-ring and single groove demarcating the "decorated zone" of the original. Seven examples of similar type, in some cases with a slight offset replacing the groove. One or two are mica-coated or rouletted. (697)

154.—Hard buff ware. Imitation Drag. 37, decorated with vertical lines of white barbotine. Part of another showing similar decoration. In this series of six examples, some mica-coated and rouletted, and one in grey ware, the groove of 153 is replaced by one or more beads in appropriate positions. For similar types at Chester see Newstead, *Deanery Field*, ii, Pl. VIII, 2, 3. (697)

155.—Buff ware with imitation Samian slip. Imitation Drag. 37, but with simple rim and plain wall. A similar form from Holt is in Wrexham Museum. (697)

156.—Good grey ware. Imitation Drag. 29. The date of these imitations is hard to fix, since they generally well outlasted the original Samian forms. At Wroxeter they are said to be "more common in the latter part of the 1st century than in the beginning of the 2nd, and it is doubtful if they lasted far into the reign of Hadrian" (*Wroxeter*, i, p. 70). Single example. (699)

157–60.—A representative series of small flanged bowls derived from the Samian forms Curle 11, Ritterling 12, and their variations. They are mostly of excellent workmanship, in red or buff ware in some cases with a red or buff-coloured slip. The foot-stand where it remains is low and grooved. These bowls at Chester are characteristic of the second century (Antonine) deposits (one, unpublished, was found with the Dragonesque brooch figured by Newstead, *Deanery Field*, ii, Pl. VII, 3). They occur in this and earlier periods elsewhere

(*Wroxeter*, i, Fig. 17, 16, 80–120 A.D.; *Caerleon Amphitheatre*, Fig. 20, 28, Hadrian–Antonine; *Caerleon*, i, Fig. 31, 57, etc.).

157.—Good dark red ware with thin slip of same material. Bead below flange. Single example. (704)

158.—Light buff ware with white slip. Bead slightly above flange. Five examples, one with rubbed wave and dot pattern on flange (*cf.* 229 below). (705)

159.—Good pink-buff ware. Bead well above flange. The bowl at Chester found with the dragonesque brooch referred to above is almost an exact parallel. Four examples. (704)

160.—Buff ware with buff slip. A variant with no bead rim. Six examples, all in pink or buff ware. (705)

161.—Orange ware with red (imitation Samian) slip. Small flanged bowl akin to the above group 157–60, and Drag. 38. Single example. (708)

162.—Buff ware with buff slip. Imitation of Drag. 18 with the addition of a quarter-round moulding at internal junction of wall and base. Fragmentary stamp LC in centre of base. One other example (fragmentary) of imitation 18 in red ware with imitation Samian slip. (701)

163.—Hard red ware with red slip. Imitation of Drag. 31 (apparently the variant Ludowici Sb) but the base is missing. *Cf. Wroxeter*, i, Fig. 17, 24 for a similar form dated to the Antonine period. Single example. (702)

164.—Good red ware (? slipped). Imitation of a variant of Curle 15 (*cf.*, for example, O. & P., Pl. LXVIII, 3, from Housesteads; *Forden Gaer*, ii, S67) a typical second-century form. Single example. (702)

165.—Good red ware. Imitation of Drag. 33. Other fragments may have belonged to the same form, but are not complete enough to judge. For small cups of somewhat similar type, see 175, etc., below. (710)

166.—Hard buff ware with buff slip. Base restored from a second example. Imitation of Drag. 27. Three examples. (703)

167.—Good buff ware. Imitation of Drag. 38. One of three examples, one of which was found near the double flue kiln. The Samian form is said to be characteristic of the second half of the second and early part of the third centuries. It was frequently copied in coarse pottery, and the imitations are generally recognized as of third–fourth-century date (*Richborough*, i, 109–12, all fourth century; *Segontium*, 39, *c.* 375 A.D.; May, *Silchester*, Pl. LIV, 94). The Holt bowls, however, show a closer resemblance to the original form than do these later bowls (for example, in the bead-rim) suggesting that at

Holt these imitations may be as early as the end of the second century. (703)

168.—Red ware with imitation Samian slip. Imitation of Walters 80 (*cf.* Ludowici Sp and Sq—*Ludowici*, iv, p. 245). For a somewhat similar form *cf.* Corder, *Crambeck Pottery*, Pl. ii, 32. The Samian bowl dates from the Antonine period onwards (O. & P., Pl. LVIII). Two examples. (709)

*Miscellaneous forms* (Figs. 71–5).

A full series of the miscellaneous pottery types is figured. Many of the forms appear to be peculiar to the site, and cannot be closely paralleled elsewhere. Their occurrence on other sites would therefore be a valuable indication of the distribution of Holt products, since with many of the commoner forms the quality of the ware as found at Holt is not a reliable guide for the determination of their origin. It may be noted that once again first–second-century types, and particularly those belonging, as far as can be judged, to the late first and first half of the second century, predominate.

169.—Dish of fine buff ware with buff slip. Flange-rim, grooved near outer edge, high sharply modelled foot-ring defined on the exterior by a half-round moulding and on the interior by a groove. A fine vessel for which no parallel can be found, it is clearly a *tour de force* of a local potter. (677)

170.—Dish of good red ware with red slip closely resembling Samian. Flange-rim with groove near outer edge, groove at internal juncture and slight offset at external juncture, of wall and base, and another slight offset on foot-ring. This bowl shows similar feeling to the last (*e.g.* in the grooved rim) and is perhaps the work of the same potter. Found 8 feet down in the "ditch" between the site and the River Dee (present course). (678)

171–4.—*Eggshell ware.* The large quantity of fragments of this fine white pottery indicates that eggshell ware was included among the finer classes of pottery made at Holt.[1] No vessel could be completely reconstructed, but the commonest forms were small conical cups similar to 171 and 174, with everted or straight rim and frequently rouletted walls. Olla-shaped vessels and bowls also occur, and the same type of ware, though heavier, was also used for large vessels, such as

[1] Samples of the ware were submitted to Dr. North, who states: "There are, associated with the carboniferous limestone of Flintshire and Denbighshire, residual clays of light colour that have been used for pottery-making. Whether the fragments herewith were made from that clay or not it would not be possible to say in the absence of suitable material for comparison, but it is at least a legitimate assumption."

platters of type 222, dishes of various types (as 186–7) and large olla-shaped forms with rouletted walls. Eggshell ware does not apparently occur long after the first century (May, *York Pottery*, iii, p. 7 gives several examples of fine ware in *terra-nigra* dating to the first and early second centuries). At Oare, Wilts., fragments of very fine white ware, apparently imported, were found in the early first-century rubbish-heap with quantities of native pottery (*Wilts. Arch. Mag.*, 36, p. 131), but bearing direct upon the date of the Holt eggshell ware is provided at Chester, where fragments, particularly of type 171, and of identical production, have been found sporadically in late first-century deposits (information from Professor Newstead). So, too, at Caerleon, ware of the same type, and probably also a product of the as yet undiscovered legionary kilns, occurs in deposits of the same date (*Caerleon*, i, Fig. 36, 132). The four examples illustrated are the only vessels complete enough for illustration.

171.—Straight-walled cup. Everted rim with two grooves on inside, girth-grooves on body, with very fine rouletting, and three mouldings above carination. The feet of this and other vessels are restored from detached bases in the collection. (711)

172.—Bowl-shaped cup. Flange-rim, stepped above and below, the outer wall divided by a raised moulding into two zones each decorated with very fine rouletting. (711)

173.—Upper part of bowl of thin ware approaching true eggshell. Bead rim with zone of wavy rouletting below demarcated by a well-moulded rib. (711)

174.—Straight-sided cup of brownish-white eggshell ware. Decorated with pairs of raised mouldings and a band of widely spaced rouletting. (711)

175–92.—*Other classes of fine pottery.* Beside eggshell-ware quantities of other small vessels in various types of fine ware were also produced. These small vessels are all well made, and include many different forms, although in most cases they are too fragmentary to allow of reconstruction. A selection of the most complete is here figured. Though the forms themselves are largely unparalleled, the distinctive types of ware—hard light buff, resembling eggshell, dark red slipped or unslipped, buff with burnished buff slip—are not uncommon at Chester, and where dated they appear generally to belong to the close of the first and early part of the second centuries (see 177, 181, and Newstead, *Infirmary Field*, ii, Pl. VIII, 7 for an olla of the light buff ware in a deposit dated late first–early second century).

175.—Cup of buff ware with buff slip. Bead-rim with single groove on interior, and low footring. (712)

176.—Cup of similar ware. Plain rim with groove on the interior. Foot missing. These cups bear a slight resemblance to the Samian form, Drag. 33, but the resemblance is not so marked as to bring them into the category of imitations. (712)

177.—Cup of similar ware. Bead-rim, slightly undercut, with groove on interior. Flat bottom, with groove near outer edge. The identical form (with a slight variation in the form of the rim) was dated at Chester by its association with coins of Trajan and fragments of rusticated ware to the early second century. (Newstead, *Deanery Field*, i, Pl. VIII, 6.) (712)

178.—Cup of red ware. Flat-bottomed, of similar type to last, but with a small flanged and stepped rim. (712)

179.—Cup or beaker of fine pink-white ware. The form recalls one of the well-known glass vessels of similar type to *Wroxeter*, iii, Pl. XXIII, 1. (715)

180.—Beaker of thin brown ware, slipped and burnished. Two mouldings on exterior, and two grooves on interior rim. See 181, 182. (714)

181.—Beaker of hard red ware of same type as 180 and 182. Sharp carination, with very fine rouletting both above and below, the upper part restored from other examples. The group is represented by a number of fragments of distinctive type, one example being considerably larger than the rest. The form suggests Late Keltic influence, and examples elsewhere are dated late first–early second century. See Newstead, *Records*, p. 87, 31 a–c (three examples, of ware closely resembling that of 182, from various sites in Chester, 31a only being dated *c.* 75–100 A.D.); Baldock burial group 4 (W. P. Westell, *Roman and Pre-Roman Antiquities in Letchworth Museum*, p. 4 f—"second century"); Colchester burial group 63 (Colchester Museum—80–120 A.D.). (714)

182.—Beaker of light buff ware, of similar type to 180 and 181, but with low footring. (714)

183.—Cup or dish of dark red slipped ware, with wide reeded flange-rim. (716)

184.—Shallow dish of buff ware with flat ledge on inner side of rim and low foot-ring. One other somewhat similar but slightly larger example. (716)

185.—Dish of good buff ware with slip of same material. Oblique slightly concave wall, with slight offset at internal juncture with base, and low footring. From the double flue kiln. (716)

186.—Dish of white ware, of the same type as, but heavier than, eggshell. The form is reminiscent of the Samian forms Drag. 18 in the roll-rim, and Drag. 15/17 in the well-executed mouldings at the external juncture of wall and base. (716)

187.—Dish of soft pinkish-white ware, with rim indented to give the impression of frilling. (716)

188.—Lower part of small barrel-shaped vessel of fine red ware, grooved as on the large flagon, 118 above. Possibly a small handled mug, or flagon, but the complete form is uncertain. (713)

189–90.—Feet of two small olla-shaped vessels of which there was a number in this class of pottery, but all were too fragmentary for complete reconstruction. 189 of soft grey ware, 190 of the more usual buff, slipped and burnished. (713)

191.—Small globular beaker of buff ware, with slip of same material. Vertical rim, with slight constriction on shoulder, below which the wall is decorated with very fine rouletting. Perhaps a copy of the Samian beaker form 67, which is particularly characteristic of the Flavian period. From No. 6 kiln. (713)

192.—Lid of buff ware with buff slip. One of three miniature lids suitable for these small classes of pottery. (717)

193–5.—*Small globular beakers.* 193 and 194 are the commonest types. Beside the four examples in the collection, some half a dozen from Holt are in the Wrexham Museum. All these examples come from No. 6 kiln. For a discussion of the type see R. E. M. Wheeler in *Essex Arch. Soc. Trans.*, N.S., xvi, pp. 24–6. The relation of the foot to the body is the determining factor for dating purposes. In early examples the body is globular, the widest girth being low down; as the type advances into the second century, however, the foot receives greater emphasis, and the widest girth moves higher up the body.

193.—Buff ware. The earlier examples are frequently rough-cast, but none of the Holt examples in ordinary ware is so treated (see below, 200). The lower part of the example figured is slipped and burnished, the upper portion being of plain ware. This form is analogous to late first–early second-century beakers such as *Wroxeter*, i, Fig. 18, 36 (a large specimen—80–110 or 120 A.D.); *Brecon Gaer*, C51 (late first century). Three examples. (646)

194.—The only example of the form in grey ware. Buff or red is more usual. The ware is coarser, and the moulding poorer, than in 193, suggesting a later date, although the form is similar. Single example. (646)

195.—Red ware. The more pronounced foot and the less globular body of this specimen indicate a later date. Fairly close parallels belonging to the second half of the second century may be cited: *Corbridge*, 1911, Pl. XII, 73 (late second-century deposit); and at Chester in Newstead, *Infirmary*

*Field*, i, three from grave 26 with " 2nd brass " of Antoninus Pius (138–61 A.D.); also *Infirmary Field*, ii, Pl. VII, 3 (not dated). Two examples. From No. 6 kiln. (647)

196.—Globular beaker of red ware, with small foot. The form resembles that of 193, but is larger and generally coarser in execution. Two examples. (644)

197.—Pear-shaped beaker of yellow-buff ware. The form of the rim is similar to that of 196, but the more elongated body argues a later date. For a similar, but probably earlier example, *cf.* May, *Carlisle Pottery*, Pl. IX, 117. Single example. (645)

198.—Fine buff ware. One of a group of five globular beakers of medium size, with small footstands. This type generally has the body grooved low down on the shoulder, suggesting the late first-century Samian form Drag. 67. (644)

199.—Good red ware. Small beaker with cut-away base, simple lip, and rubbed lattice on side. Three other similar examples. (648)

200.—Red ware with black slip, rough-cast. Rough cast technique is comparatively rare after *c.* 150 A.D., and the later examples generally have the applied particles coarser and more sparsely distributed than do the earlier. A number of fragments show this type of decoration, generally in association with this black slip, and on beakers of this type. This black-slipped ware without rough-casting is also present in small quantities. Some of it appears to be of local manufacture, but the ware of one or two other fragments is not of characteristic Holt type (see 236 below) and is probably imported. The fragments unfortunately are in most cases of small size, thus increasing the difficulty of identification. (753)

201–5.—*Indented beakers, cups, etc.*

201.—Buff ware with remains of mica-coating. Three girth-grooves on shoulder and one on lower half of body. One of three examples, all fragmentary. Closely similar types at Wroxeter are dated *c.* 80–120 A.D. (*Wroxeter*, ii, p. 50, 53). The ware of some of these Wroxeter specimens is very similar to that of some of the best Holt mica-coated ware. (748)

202.—Tile-red ware with mica-coating (worn). Pairs of girth-grooves above and below identations, with small indentations on shoulder alternating with the large ones. Small foot. Probably early second century. Single example. (744)

203.—Buff ware with mica-coating. Vertical grooves instead of indentations, with girth grooves above and below, and small grooved foot. Single example. (745)

204.—Buff ware with smooth burnished buff slip. Open-

mouthed indented cup. The fine buff ware of the same type as 119, etc., above, belongs to the early second century and does not seem to occur after that period. Single example. (747)

205.—Light buff ware with metallic lustre-slip, olive-green on exterior, and shiny black on interior. Flat planes alternating with indentations. Ware and form (third–fourth century) are not otherwise represented ; they somewhat resemble Castor products, and may be of non-local origin. (746)

206–9.—*Strainers and "cheese-squeezes"*. These vessels, although they are fairly common on Roman sites, are found over a wide period, and cannot on present evidence be dated closely.

206.—Soft pink-buff ware. Simple straight-sided type with flat bottom. Single example. (740)

207.—Soft reddish ware, with remains of hæmatite slip. Thickened and inturned rim, the pierced base mostly wanting. From No. 6 kiln. Single example. (741)

208.—Pink-buff ware. Corrugated outer wall, with two uneven lines of holes pierced from interior. Bottom ridged and pierced, but incomplete. Single example. (739)

209.—Brown ware. Round-bottomed handled strainer. Holes arranged radially from centre. The example figured is in Wrexham Museum : there is one other fragmentary strainer of slighter type in the collection. *Cf.* a round-bottomed strainer without handle at Wroxeter dated 80–130 A.D. (*Wroxeter*, ii, Fig. 19, 65). (739)

210–11.—*Small dishes.*

210.—Good red ware. A somewhat similar form to 168 above, but with everted rim in place of bead. Outer wall decorated with fine rouletting. Two examples. (731)

211.—Dark red ware. Outer wall covered with fine rouletting. An unusual form, which suggests the influence of a metal original in the grooved rim and sharply modelled angular foot-ring, as also in its general feeling. Single example. (732)

212.—Large bowl of red ware (? with red slip). Reeded rim with applied roll-handles and foot demarcated by internal and external offsets. Eighteen examples of the type are preserved. Of these, ten have plain rims, the other eight being reeded. The base in some cases also is of the plain "cut-away" type, while one or two examples like that figured show a series of concentric grooves on the underside. Wasters of this type were frequently used as saggars for the protection of glazed vessels in the kiln (see below, p. 182). The form belongs to the late first–early second centuries. Similar forms at Caerleon range from the Flavian to Hadrianic periods (*Caerleon*

*Amphitheatre*, p. 182, 44–5 ; *Caerleon*, i, 129). At Chester it has been found in an undated deposit (Newstead, *Infirmary Field*, i, p. 162, x. 63) and a parallel form though of different technique and origin is dated by the associated Samian to the late Flavian period (Newstead, *Deanery Field*, ii, p. 28, 17). (750)

213–14.—*Tazzas.* Though elsewhere apparently not a very common form, twelve specimens are represented.[1] The type is discussed by Wheeler, *Brecon Gaer*, C63, where the notched types are said to be later than the frilled, first appearing *c.* 150 A.D., and then tending to replace the latter in the third and fourth centuries. Both frilled and notched types are represented here, with one example showing both techniques side by side. The two main types are figured. One other has the notches on the shoulder carried out as though by rouletting on the wheel with a knife. The bases as far as they remain are hollow. The ware is red or buff, sometimes micaceous (not mica-coated) and sometimes white-slipped. One or two specimens show a slight blackening on the interior, which supports the suggestion of their ritualistic use as incense bowls.

213.—Buff ware. Frilled on outside of rim and on shoulder. *Cf.* the Brecon Gaer example already quoted (early second century). It is perhaps doubtful how far these vessels may be dated on the form of the frills alone. Four examples. (751)

214.—Tile-red ware. The most complete example. Double-notched rim and notched shoulder, that on the outer edge of the rim being cut out with a sharp knife, while that on the inner is impressed with a blunt tool. One or two typologically later examples show wheel-made notches on the shoulder. Four examples. (751)

215–16.—*Incense-burners.* A comparatively rare form represented in all by five examples. See May, *Silchester*, p. 119, 71, where German examples dated to the Domitian–Hadrian period are quoted, and C. Fox, *Arch. Cambridge Region*, p. 208 and Pl. XXI, 3 and 3a, for a fine example from Litlington, Cambs., in which the perforations in the dome form the name INDV[L]CIVS.

215.—Soft pinkish-buff ware. Straight-sided type, largely restored from a number of fragments. Four examples, one of which has a rouletted wall with mica-coating, a recognized

[1] Tazzas appear to be unusually common at Chester, particularly, so Professor Newstead tells me, in Antonine and post-Antonine deposits. They are never found in the earlier periods. Fragments of twenty examples were found in the Deanery Field excavations of 1928, chiefly in association with late second–early third-century material. For recorded examples, see Newstead, *Records*, p. 72.

early treatment. The underbase of these vessels, omitted in the drawing, is generally strongly coned inwards. (743)

216.—Buff ware. Same type as last, with concave wall above carination. Single example. (742)

217–21.—*Single types.*

217.—Urn of red ware with creamy-white slip, with frilled rim, and probably originally with three spouts and handles. The fragment remaining shows only one spout. For the type see Oelmann, *Niederbeiber*, p. 67 (type 80) where it is stated on the evidence of German examples that the form lasts apparently unchanged from the first to the third centuries, available material not at present giving clear indication of its development. These urns are not a common type in this country; for a similar but simpler example dated *c.* 100–50 A.D. see *Wroxeter*, i, Fig. 18, 39. Single example. (754)

218.—Bowl of buff ware, slightly blackened by fire. Reeded flange-rim, with two-girth grooves on body, and two lugs unevenly placed above middle. For somewhat similar lugs *cf.* 138 above, and ORL, *Faimingen*, Pl. XII, 24, etc. The technique of this unusual vessel is closely similar to that of the flanged and carinated bowls (80, etc. above) and it is probably of similar date. Single example from the main-flue arch of the double-flue kiln, with 126 (two) and 231. (724)

219.—Bowl of brown ware, with inturned rim, to prevent spilling. The Samian form Déchelette 70, a variant of Drag. 37 with the inturned rim (Déchelette, i, p. 152) is of the same type, but the resemblance is not so close as to suggest direct copying. Single example. (728)

220.—Beaker of hard dark brown ware. Two girth-grooves on shoulder, with coarse rouletting above and below. *Cf. Wroxeter*, ii, Fig. 18, 49, dated 80–110 A.D. This vessel is probably not of Holt manufacture. The ware, though fairly hard-fired, is coarse, poorly knit, and of uneven colour. The form has late Keltic affinities (*cf.* May, *Silchester*, Pl. LXXVII, 5 and p. 188). Single example. (734)

221.—Large flat-bottomed bowl of coarse pink-buff ware. Single example. (733)

222–3.—*Flat-handled platters.* These handled platters are derived in the first place from metal originals, perhaps by way of the well-known Samian platters with flat handles of somewhat similar type (O. & P., p. 198 and Pl. LVII). Examples of the two varieties in which they occur are illustrated and described below. The first of these at any rate is not likely to be later than the early part of the second century, judging by its occurrence with mica-coating; a fragment with the characteristic notched flange is recorded at Chester, but is not

datable (Newstead, *Infirmary Field*, i, p. 162; x, 66). A mica-coated example, not published, was also found outside the Eastgate, on the line of the fortress ditch (information from Prof. Newstead). The second is not apparently recorded.

222a.—Soft pinkish-buff ware (probably a waster: the better ware is represented by b). Flange-handles decorated with stabbed ornament arranged in lines and simple scrolls. Rim of bowl slightly flanged and grooved, the central bead being more or less regularly notched. Slightly raised foot-ring.

222b.—Good buff ware, with traces of mica-coating. Same type as last, with conventional ivy leaves in place of scrolls.

222a, b are represented by fragments of at least three other specimens with similar decoration, one being in unfired clay. Other fragments show the notched rim, but are not complete enough to determine the exact original type. In the Wrexham Museum collection one of each type is represented, with another of type a in white ware of eggshell type.

222c.—Good buff ware. In the notched handle this specimen resembles 223, but in general form it is more akin to the above. Handle pierced with two holes, with decoration of light roughly oval impressions. (752)

223.—Brown ware with hæmatite slip. Flat handle with notched edge, decorated with crude mechanically-incised arcs. Low foot-stand. A second example has a more elaborately carved handle, but without the decoration. (752)

224-7.—*Unusual forms probably derived from Samian prototypes.*

224.—Flat two-handled flask of coarse red ware. Two grooves following outline of body. The greater part of the vessel is missing, but it is apparently an imitation of the sigillata flask Déchelette 63 (Déchelette, i, Pl. IV). Single example. (706)

225.—Bowl of buff ware, with band of angular mouldings below roll-rim. The mouldings and the interior are coated with a very finely applied red slip, the exterior below the mouldings having an excellent yellow-buff slip. Apparently a modification of Drag. 37. Four other examples of poorer quality, all apparently wasters. Variations in the mouldings also occur, but their exact form is also found on the green-glazed fragment below (p. 177). The identical form at Chester has been dated, by its association with stamps of CINNAMVS and CARATILLVS, approximately to the Antonine period (Newstead, *Records*, p. 71); but one variety at least, at present unpublished, has been found with material dating it to the earlier part of the second century. The example illustrated came from No. 6 kiln. (707)

226.—Large bowl of reddish-buff ware, with remains of mica-coating. The form appears to have been derived from Drag. 37. The wall is divided by heavy flat beads into zones as on the Samian vessel, the upper "plain zone" of the original having an angular profile which is one of the characteristics of the group. The small foot-ring is restored from another example. The form is not recorded from Chester, but a small fragment of rim of identical type was found in the drain of Building I at Segontium. This drain contained pottery which was "mostly of early second century date" (*Segontium*, p. 30), and all five examples of the type at Holt have the mica-coating which apparently did not outlast that period. (698)

227 a–f.—A group of six rims, all showing similar features. All of soft buff or red ware, in some cases with imitation Samian slip, they are probably wasters, a single well-fired example being of good red ware. The body is in all cases rouletted, and the slightly overhanging moulded rim appears to undergo a progressive development from b through a to f, apparently the latest form typologically, in which the character of the first is completely lost. The type seems to owe something to the Samian form Drag. 29, or a derivative of it. Its date is quite uncertain. Three other examples beside those illustrated, one a distorted waster in grey ware. (700)

228–30.—*Large bowls.*

228.—Buff ware. Fragment of rim of bowl of similar type to 212 above, with applied four-ribbed "strap-handle" in place of roll-handles. Single example. (750)

229.—Good red ware. Large bowl which originally had two handles. The base also is missing. Band of incised decoration consisting of two wavy lines flanking a line of oval stabbed dots, enclosed by girth-grooves. Fragments representing three other large vessels, two with white slip, but their form is uncertain. (749)

230.—Buff ware, with traces of mica. Flat handle with scalloped edge, pierced with holes and decorated with grooves following the outline. The rim also is grooved. Single example. (750)

231–4.—*Unguent-pots.* Four definitely identifiable examples, but other fragments may have belonged to similar vessels. These small vessels do not appear to allow of close dating (see below, 233–4).

231.—Tile-red ware. *Cf. Wroxeter*, iii, Pl. XXVIII, 84, dated 90–130 A.D. From arch of fire-hole (with 126 (two) and 218), double flue kiln. (735)

232.—Tile-red ware. Corrugated body. At Newstead, a

similar form occurred in both early and late periods (Curle, *Newstead*, p. 252). (736)

233.—Red ware with white slip. Incised spiral groove about body; foot and mouth missing. *Cf.* May, *Silchester*, Pl. L, 74. As already stated, these vessels do not allow of close dating. At Neuss a similar example is dated to the Flavian period (*Bonn. Jahrb.*, 111–12, p. 356); at Zugmantel six were found with three coins, the latest of Faustina I (138–41 A.D.—ORL, *Zugmantel*, pp. 42 and 171, Pl. XVII, 23, 25), and at Newstead (see 232 above) they occurred in both periods. At Balmuildy "about a dozen" were found, two of similar types to 231–2 being figured (*Balmuildy*, p. 94, Pl. XXXVIII); and they are also represented in the late second-century group at Corbridge (Corbridge, 1911, Fig. 6, 64). The evidence for later periods in this country is incomplete, but on the Continent similar types occur at Niederbeiber (*Niederbeiber*, p. 68, type 81—*cf.* also 76b, the latter an unusual form, and are even found in the post-Roman period (two examples of Niederbeiber type 81 in Frankish graves at Andernach). The various forms seem to occur side by side. (737)

234.—Buff ware with worn remains of white slip; the mouth missing. Pointed type. *Cf. Colchester Museum Report*, 1924, Pl. VII, 2758.24, for the complete form. The small and occasionally pointed feet of these so-called "unguent-pots" are generally taken to indicate that they were inserted in the ground to hold the small quantity of oil necessary for a lamp (Curle, *Newstead*, p. 252—*cf.* a pointed vessel at the Brecon Gaer—*Brecon Gaer*, C2). The Holt specimen has its pointed end bored to a depth of $\frac{1}{4}$ inch, suggesting, if contemporary, that it may also have been set on some kind of pointed stand. (738)

235–40.—*Miscellaneous types of decoration.* Six out of a number of fragments all of uncertain or indeterminate form with various types of decoration, are figured. All, with the probable exception of 236, are apparently of local manufacture, and in many cases wasters. The types not illustrated include: a number of fragments in red ware with white slip with applied scale-pattern; fragments of buff ware with irregular barbotine decoration perhaps intended to represent animal and tree forms; a fragment of buff ware with burnished vertical lines and white slip decoration; and fragments of buff ware with small applied pellets arranged like bunches of grapes.

235.—Fragment, perhaps of an olla, of good thin buff ware, decorated with a line of small applied discs set equal distances apart. The discs have hollow centres and frilled outer edges. (755)

236.—Creamy white ware with dull black slip. Decoration on *inner* side consisting of scrolls and dots in thick white barbotine. The fabric somewhat resembles ware of Castor type, and is probably not of Holt manufacture. There are also one or two fragments of undecorated beakers in the same kind of ware and slip. The form of the present may perhaps have been similar to the (apparently) late third-century dish with internal scroll decoration from Leighton Bromswold, Hunts., figured in *V.C.H. Hunts.*, i, Pl. IX, 13. (755)

237.—Fragment of thick coarse grey ware, decorated with incised "multiple-arch" pattern. For a discussion on this type of decoration see R. A. Smith in Sumner, *New Forest Pottery Sites*, p. 28 f. The same forms occur on megalithic monuments in Ireland and Brittany, and it is suggested that its origin in regard to Romano-British pottery should perhaps be sought further back than the ovolo-motif of the Samian potters. In the Holt example each unit has two or three short lines added inside the inmost arch. The same decoration occurs on one other object (above, p. 131, No. 10). (755)

238.—Rim of platter, of red ware with red slip in imitation of Samian, decorated with conventional vine-scroll with bunches of grapes *en barbotine*, between two grooves. From the potters' workshop and drying-shed. (755)

239.—Part of a straight-walled pedestalled vase of buff ware. Shoulder and rim frilled, with crudely-modelled head and bust of man, attached to rim and lower part of wall by top of head and bust. The head is hollow behind, leaving a space between it and the wall of the vessel. For similar heads used for pottery decoration, see above, p. 130, Nos. 1–4. (758)

240.—Fragment of small beaker, perhaps of same type as 181 above, of good red ware, decorated with white lines and dots in thin slip. (755)

241.—(Fig. 60, 4). Pottery copies of the metal skillet with ram's-head handle. The handles only of four of these vessels remain. All are in buff ware. They appear to have been cast (? in two pieces) and afterwards trimmed over with a sharp knife. (759)

242.—*Not illustrated.* A small miscellaneous quantity of pottery in fragmentary condition, preserved for comparative purposes. It includes fragments of so-called "feeding-bottles", large red-ware dolia, handled cups, etc. (757)

### (ii) Lamps.

The pottery lamps found are of characteristic first–second-century type, approximating to Walters' forms 91–3 (*B.M.*

*Catalogue of Lamps*, pp. xxiv ff.). The lamps were probably made at Holt, since the materials appear to be local, and one (No. 2) was found in No. 6 kiln. No traces of moulds, however, were found.

Fig. 75.

1.—Incomplete lamp of good red clay with slip of same material. Depressed centre on same level as nozzle-groove, without design. Stamped on the base SEXTVS. One of a
F
number of examples bearing this stamp, which probably represents a local potter.[1] (720)

2.—Lamp of well-fired buff ware, ? with buff slip. Length 108 mm. Weak moulding. Body and nozzle merge together to give the latter a somewhat oval form. The type would seem to be typologically later than the others. From No. 6 kiln. (720)

3.—Lamp as 1, but smaller. Length 92 mm. Soft unslipped red ware. Depressed centre separated from nozzle-groove by raised moulding (Walters, type 93). No ornament or stamp. (720)

4.—Part of discus of lamp of similar type to last. Soft red ware. Depressed centre, with head of Mercury (?), much worn and blurred. (720)

*Not illustrated.*

5.—A number of fragments of lamp-bodies and discs showing the method of manufacture. Separate moulds were used for body and discus, both parts being joined while the clay was still moist. The exterior was then pared and smoothed over before firing. In some cases the joint of discus and body had re-opened. (720)

### (iii) Green-Glazed and Imitation Cut-Glass Wares.

As some at least of the cut-glass wares were intended for glazing, both types are here dealt with together.

The type of decoration imitated was particularly characteristic of the small glass beakers which are found in first–early second-century sites in Britain and on the Continent.[2]

[1] The stamp SEXTI on lamps is well known, but not, apparently SEXTVS. The former occurs, for example, at Caerleon Amphitheatre
F
in Hadrian–Antonine deposits. *Caerleon Amphitheatre*, p. 172 and Pl. XXXIV, 2

[2] *e.g.* at Gelligaer (*Gelligaer*, pp. 84-5). A number of dated examples from Germany is listed by Oelmann (*Niederbeiber*, pp. 7–8).

In these beakers the greater part of the outer wall is covered with oval or diamond-shaped facets in alternating lines. The technique was imitated in Samian ware during the second century, apparently as early as the Antonine period (O. & P., p. 224), but the makers of coarse pottery seem to have forestalled the Samian potters, a fragment of a white clay beaker with red slip bearing this type of decoration having been found at Bohn with definite late first–early second-century associations.[1]

The Holt cut-glass wares fall into two main classes, for neither of which is there any direct evidence of date available. The first of these shows the correct treatment, in which the lines of facets alternate, while in the second the facets do not interlock, but are arranged end to end in vertical, as well as in horizontal, lines (compare, for examples of the two types, Nos. 2 and 5 below). In all cases the form of the vessel is that of the Samian bowl Drag. 37 with slight variations, and the bowls were in some cases glazed, and in others coated with the characteristic hæmatite slip. A progressive degradation of workmanship and ornament is indicated in the catalogue below.

In spite of the absence of direct evidence some indications of date are not altogether wanting. The angular mouldings below the bead-rim of No. 3 so closely resemble those of another bowl (No. 225, p. 171) that a similar origin and date may be safely assumed for both. An exact parallel at Chester dates the latter probably to the Antonine period and varieties of the same form have been found in earlier deposits; so that while the technique of the cut-glass vessel differs somewhat from that of the other wares of the class, the type may be assigned tentatively to the early part of the second century.

The green-glazed wares made at Holt are an important series, from the light they shed upon the manufacture of this type of pottery in this country. Green-glazed wares were produced in some quantity in the Allier valley of France, where one of the most characteristic forms was a moulded jug or flagon (Déchelette, i, pp. 41 ff.), as well as elsewhere on the Continent, and these Continental fabrics are represented by a few examples on early sites in Britain (*e.g.* the green-glazed bowls from Wroxeter, now in Shrewsbury Museum, Bushe-Fox, *Wroxeter*, pp. 20–1).

In addition, however, green-glazed pottery of much coarser quality than the Continental types has been fairly frequently

[1] Figured by Oelmann, *op. cit.*, p. 8 and Fig. 2. This example apparently belongs to a group of ceramic fabrics all imitating glass originals, the centre of manufacture of which was Cologne (*ibid.*).

found on sites in Britain ; [1] and while the similarity between this and medieval lead-glazed pottery has frequently resulted in its being assigned to the medieval period, it is now probable that much of this pottery was of Romano–British manufacture.

At Holt, the vessels chosen for glazing belong to two main categories, the cut-glass ware already described, and other coarse wares mostly in forms in imitation of Samian. Besides the glazed vessels a number of finds clearly indicate the method employed in firing glazed pottery at Holt (see below, p. 182).

Only one datable example of glazed ware is recorded from Chester. This, a bowl (imitation Drag. 37) of slate-grey ware with green glaze and decoration of hair-pin lines in white (under-glaze) slip, was found with coins of Vespasian and Domitian, and dated by Newstead to the late first or early second century.[2] This bowl is certainly a Holt product, and taken in conjunction with the evidence given above, suggests that the Holt lead-glazed wares were produced at the end of the first and at any rate during the first half, of the second centuries.

Fig. 76.

1.—Fragment of mould, of good buff ware. The ornament is apparently intended to imitate cut-glass decoration for an imitation 37. It consists of lines of lozenge-shaped incisions which would have appeared on the cast as *raised* lozenges, owing to the failure of the maker to reverse the process, in which sunk spaces on the vessel should have appeared as raised areas on the mould. No fragments bearing this decoration were found, and the mould may never have been used. No. 2 kiln (near). (718)

2.—One of a number of fragments showing true imitation cut-glass decoration, the facets being arranged in alternating lines. Soft pink ware with remains of red slip. Imitation Drag. 37. (718)

3.—A good green-glazed example of cut-glass decoration. The mouldings below the rim closely resemble Fig. 74, No. 225 (p. 171), dated by an exact parallel at Chester to the Antonine period (see above). Good cable-moulding above decoration, and well-cut facets, probably not the work of the same potter as the others. (718)

[1] *e.g.* at the Brecon Gaer (Wheeler, pp. 229–30), all in late first–early second-century deposits.

[2] Newstead *Deanery Field,* II p. 27 and Pl. XIII, 8. Other (unpublished) examples which have been found, though almost certainly of Holt manufacture, are without evidence of date.

4.—Restoration of a number of fragments probably all of the same bowl. Slate-grey ware, like that of the Chester glazed wares referred to above. Glaze varying from light yellow to dark brown. Good moulding and well formed facets. (718)

5–7.—Three fragments of different bowls illustrating a progressive decadence in the type of decoration. In all three the alternating lines of true cut-glass decoration are replaced by a vertical arrangement of the facets. The workmanship also shows a progressive coarsening, both in regard to the formation of the facets and the moulding of the vessel itself. Thus, in No. 5, of light buff ware, the moulding of rim and cable-moulding approaches that of Nos. 3 and 4, and the facets are well-cut. In No. 6 the facets are still fairly well formed, but the cable moulded ridge is replaced by a slight offset, notched in imitation of the original cable-moulding. No. 7, of fairly good buff ware, of coarse texture, with thin red slip, shows the final stage, in the coarser moulding of the rim, the omission of the notches along the offset, and especially the cruder rendering and spacing of the facets. Other fragments not illustrated show the same features. It is doubtful whether this debasement has any chronological significance of value, since it may represent attempts of inexperienced potters to imitate the work of more skilled men. The " find-spot " of one only of these fragments—No. 5, from No. 6 kiln—is known. (718)

8.—Cup, almost complete, of red ware with green glaze. Imitation Samian form Drag. 33, with low foot-stand and double external moulding at rim. Probably a " waster " because the glaze had not taken well. A number of fragments represent several other vessels of the same form. (718)

9.—Part of cup of grey ware with thin brownish glaze. Decorated with girth-grooves and rows of coarse rouletting. Perhaps intended to imitate the small rouletted Samian cup, Drag. 30 (see O. & P., p. 222 f. and Pl. LXXV, 13). (718)

10.—Part of a handled skillet or cup of red ware with good olive-green glaze, diam. 160 mm. (718)

11.—Part of a vessel of uncertain form, perhaps a bell-shaped cup. Red ware with thick mottled fawn-coloured glaze, which has run in one place on the rim, perhaps because of over-dipping. (718)

12.—Kiln-prop of silicious red ware, the prongs broken. See below, p. 182. This example was never used. (718)

13–14.—Rims of large bowls, used as " saggars ". See below, p. 182. (718)

### (iv) Stamped Wares.

The stamped wares from Holt have already been partly illustrated and described by Haverfield in his article in *Roman Britain in* 1914.[1]

Stamped wares—*i.e.* pottery in which the decoration has been carried out by means of direct stamping of the design on to the vessel, instead of through the medium of a mould, as in the case of Samian—have received considerable attention in recent work in this country; and the latest summary of the evidence (*Richborough Report*, i, pp. 89–92) relating to this and allied wares makes unnecessary any detailed account here. The Holt stamped wares do not appear to have any direct connexion with types produced by a similar technique elsewhere.

The New Forest class of stamped pottery appears to be almost entirely confined to late sites in the south, being comparatively rare, if not altogether wanting, in the north and west.[2] Its initial date is still uncertain, but there can be no doubt that it may be assigned on general grounds to the fourth, and perhaps also to the late third centuries. Much of its inspiration, as regards form and colour slip, may be traced to Samian prototypes. The *motifs* used, however, consist almost entirely of rosettes of various forms, and the careful spacing and other elements already noticed by Mr. Heywood Sumner [3] would seem to indicate the influence of "native" traditions in decorative work, in which balance of line and space is one of a number of well-recognized features.

The Holt stamped pottery, on the other hand, owes nothing to such influences, and is clearly, as Professor Haverfield indicated, a direct copy, in forms and ornament, though in somewhat different technique, of Samian prototypes. It may be regarded, therefore, as an independent departure of the Holt potters in a new direction, which cannot be correlated with other stamped wares, apparently of later date, produced here and on the Continent.

As already stated, there is a close connexion between this pottery and Samian ware, both in form and decoration. With the exception of the handled skillet (No. 2 below) and one

[1] Reprinted in *Arch. Camb.*, 1916, pp. 222–34.

[2] These stamped and allied wares were manufactured at other sites in this country besides the New Forest (*e.g.* at Sandford, Oxon. T. May, "On the Pottery . . . discovered at Sandford, Oxon.," *Archæologia* 72) and this name is only used for convenience. The relation, if any, between these and Continental stamped wares, dated by Déchelette (ii, p. 327) after the fifth century A.D., is very uncertain.

[3] *New Forest Pottery Sites*, p. 25, etc.

fragment (No. 6) of indeterminate form, the shape copied is invariably that of the Samian bowl, Drag. 37. Plain and decorated zones are also demarcated by the slight offset which is characteristic of the original vessel, but in the disposition of the decoration this division was sometimes ignored (No. 3).

The individual *motifs* used are for the most part of simple type: rosettes, pillars, and conventionalized leaf- or tree-forms which may well have been derived from Samian originals (see references below). Less easily explained *motifs* are also present, however (No. 6), and in some cases chance devices such as ring-settings were employed (No. 5).

In arrangement, the two most complete examples (Nos. 1 and 5) clearly suggest the influence of second-century bowls (Drag. 37). The use of large medallions and arcades is characteristic of much of the work of mid-second-century potters at Heiligenberg or Rheinzabern (*cf.*, for example, the work of COMITIALIS, FIRMVS, and other potters of the period—Ludowici, ii, pp. 225 ff.).

While the materials used vary, attempts were made to produce a body and glaze resembling those of true Samian. Thus, in the case of No. 1, an orange-red colour was given to the paste by the mixture of ground Bunter sandstone with the clay, according to Mr. Acton, the red (hæmatite) slip characteristic of all Holt imitation-Samian products probably being applied with a brush.

The stamps used in the decoration work were apparently of clay, but only one has survived (above p. 130).[1]

The lack of stratified finds makes it difficult to arrive at any definite date for this class of pottery. The suggested connexion between it and Samian ware would point broadly to the middle of the second century. The ware appears to have been very scarce at Chester and only one fragment is known to me. This, of ware and slip like those of No. 1 below, and bearing similar decoration was found by Professor Newstead in the Deanery Field Excavations of 1928 in association with Antonine material, though in an unsealed deposit.[2]

[1] The nature of the stamps used for the rosette-stamped pottery of the New Forest and elsewhere is uncertain, but experiments have shown that they may have been made of wood (Heywood Sumner, *op. cit.*, p. 24).

[2] Another example of stamped ware from Chester has decoration consisting of stamped leaves with rouletted stalks (Newstead, *Records*, p. 100). Neither decoration nor ware in this case closely resembles that of the Holt pottery, and it is not likely that this example was made there.

Fig. 77.

1.—Bowl of orange-red ware with imitation Samian slip. Form Drag. 37, but foot-ring wanting. Decoration consists of large medallions (executed with a compass) bordered above and below by small rosettes. Within the medallions, arcades formed of fluted pillars, containing a single leaf- or tree-form. These *motifs* in all probability derived from a number of Samian originals of somewhat similar type. Close parallels are difficult to find where the general effect, rather than the detail, of a *motif* was copied, but *cf.* Forrer, *Heiligenberg*, Pl. XXXIV, 3 for a similar type of rosette (by the "potter of the small medallion") and Fölzer, *Römische Keramik in Trier*, i, XXVIII 390 and 420 for parallels to the leaf and pillar respectively.[1] (719)

2.—Part of handle and rim of skillet or cup of tile-red ware, unslipped. Decorative *motifs* as before. (719)

3.—Fragment of bowl of form Drag. 37. Discoloured in firing, with no trace of slip. Haphazard arrangement of the same *motifs*, covering also the "plain zone" between rim and offset. (719)

4.—Fragment of bowl (Drag. 37) of soft red ware with traces of red slip. The same *motifs* arranged in horizontal lines. (719)

5.—Fragment of bowl of somewhat different quality from those already described. The form still imitates Drag. 37, but the ware is greyer, softer, and finer in texture, and the decorative *motifs*, though similar, vary in detail, and are more finely executed. Two friezes, the upper consisting of a line of arcades, each containing a head impressed from a ring-setting.[2] The upper portion of the frieze is wanting (see below, No. 6). The pillars rest on small six-spoked rosettes (the stamp for which is preserved—see above, p. 130), and are of finer workmanship than those of No. 1, etc. Lower frieze: a line of "leaves" similar to, but slightly differing from, the first type, the end of each resting on a ring stamp not found on the other examples. (719)

6.—Fragment of vessel of uncertain form, but probably Drag. 37. Soft pinkish ware, unslipped. Decoration: a line of small rings with below an unusual triangular *motif* resting on the ends of two pillars as in No. 5 above. The type is un-

[1] Somewhat similar rosettes occur on stamped ware at Silchester (May, Pl. LXXXII, B, dated to the fifth century) and Sandford (*Archæologia*, 72, p. 231). These resemblances, however, are of little importance in a simple *motif*.

[2] As pointed out by Sir Arthur Evans (quoted by Haverfield, *op. cit.*) the setting is clearly visible around the edge of the impression.

paralleled, but may be the upper end of an arcade similar to those in No. 5, to which this fragment may possibly belong. (719)

### 10. Technical Processes.

(a) *The firing of green-glazed wares at Holt* (Frontispiece and Fig. 78). Sufficient evidence was recovered to leave no doubt as to the method of firing green-glazed pottery used at Holt. In its general features the method resembles that used in modern times. The ware to be glazed was first of all fired to the "biscuit" state. It was then coated with the frit to produce the glaze, and fired a second time at a heat only sufficient to burn in the latter. During the second (or "glost") firing, the glaze was necessarily protected from the hot gases of the kiln, and it is in the method followed at Holt for the protecting and setting of the wares that the chief interest lies. For the protection of the bowl during second firing two large waster bowls (type 212 above, p. 168) were employed. Set mouth to mouth with the glazed vessel inside they acted as efficient "saggars" to prevent direct contact of the glaze with the hot gases. The glazed vessel itself, however, was also carefully set to ensure that the glazed surface should be marked as little as possible by contact with supports. For this purpose a three-pronged prop of baked clay was placed upright in the lower sagger, and was held in place by means of two clay pads. The glazed vessel was then inverted over the prop, which was of such height as to ensure that the vessel and saggar-wall should not touch. As already stated, the vessel thus arranged was then completely covered in by the second saggar. The frontispiece shows a reconstruction of this arrangement, and should be studied in conjunction with Fig. 78, in which the pieces forming the basis of the restoration are illustrated.

The colour of the glaze produced varied from light yellow through green to dark brown or almost black. Detailed analysis of this glaze was not attempted, but the presence of lead in a saggar-base (below, No. 1) leaves no doubt that the basis of the glaze was lead. To provide the necessary silica constituent for the glaze-producing frit, it is probable that powdered flint was used. The quantity of flint found mostly in small pieces, supports this theory.

Fig. 78.

1.—Base of large vessel used as saggar, showing base of prop (A) with pads (B) holding it in position. Saggar and pads are coated with glaze which has run over them from the glazed

bowl. Around the props and pads also are deposits of lead (C) which are apparently a result of chemical action during firing. These deposits give definite proof that the basis of the glaze used was lead. One of two examples found. (718)

2.—Kiln-prop, one of six found, with green glaze from the vessel still adhering. Soft tile-red ware, the three prongs worn down and the base broken slightly. The examples not illustrated are similar in type ; one other, of a harder silicious clay had apparently never been used (Fig. 76, 12).

3.—Base of vessel of red ware with good green glaze, the form uncertain, but perhaps like No. 8, p. 178 above. The three marks arranged in a triangle on the interior are those left by contact with the prongs of the prop, and clearly illustrate the use of the prop in supporting the vessel in the kiln. (718)

4.—Fragment of bowl of imitation 37 with cut-glass decoration. The same bowl diagramatically restored is shown in Fig. 76, No. 4, above. (718)

*Not illustrated.*

5.—Miscellaneous fragments of pottery all more or less coated with green glaze. Many of these, including a number of rims of large bowls approximating to No. 212, p. 168 above, were undoubtedly parts of saggars, and some, in which the glaze has run over edges accidentally fractured, may have been used as test-pieces. Such pieces would have been coated with frit and placed in the kiln to test the quality of the glaze before using it on finished vessels. (See also Fig. 76, 13, 14.) (718)

(b) *The stacking of mortaria in the Kiln* (Fig. 79). " Pads " of hard silicious clay were used as shown in the illustration for the packing of mortaria and similar large vessels in the kiln for firing. These pads are circular in section, with a diameter of *c.* 1.7 ins., and bluntly pointed ends, and with a curve suited to the diameter of the various vessels they were intended to support. They were used in pairs to keep the mortaria apart when inverted one above the other, much space in the kiln being thereby saved. At Radlett, Herts., where mortaria were the chief type made, the same device was used (*V.C.H. Herts.*, i, p. 159) and similar methods were also followed by the Samian potters to ensure the fullest use being made of the space available. (See, for example, the " *isolateurs* " figured by Déchelette, ii, Pl. XIV and p. 341, and the methods of using the various types of stand, supports, etc., described by Forrer, *Heiligenberg*, pp. 78 ff.) (781)

(c) *Large vessels, etc., probably used in pottery manufacture.* Vessels too large and heavy for domestic use, which may have been intended for use in the processes of potting, *e.g.* in the

mixing of slips. Some of the very large mortaria (above, p. 148) were probably used for the same purpose. Chief of these are :

1.—(Fig. 60, 9.) ? An oven of red ware, height 21½ inches, diameter at base *c.* 2 feet. Incomplete. Open top, with thickened rim decorated with thumb impressions. Semi-circular opening near bottom, with moulded edge and thumb impressions round. Incomplete and cracked in kiln. (143)

2.—Three cylindrical jars of heavy red ware, wheel-made, with flat bottoms and diameters of 6–8 inches. In its present state the largest is 9 inches high, but their original height and complete form are uncertain. The lower part is deeply indented externally with finger-impressions, as an aid to lifting. (144)

3.—Fragments of other large vessels, including one strainer of ware over an inch thick, pierced with half-inch holes. (144)

(d) *Potters' Tools.* A few potter's tools were found. They consisted generally of a few small suitably-shaped stones which, to judge by their worn edges and planes, had been used for burnishing and retouching vessels on the wheel. One or two animal bones, including the pricket of a red deer (below, p. 186) had been adapted to the same purpose. (783)

(e) *The clay.* The samples of clay which were preserved have been examined by Dr. North, who states that they are alluvial, rather than boulder clay (above, p. 10). The latter is an extremely variable material, frequently requiring much levigation before it is suitable for manufacturing purposes, while alluvial clay is much less troublesome and uneconomic in this respect. Included with these are fragments of pottery in the raw unfired state. (782)

(f) *Miscellaneous.*

1.—For the purposes of comparison a number of " wasters " of grey and red ware is preserved. Most of these are distorted badly through over-firing but there are several badly under-fired pieces. (784)

2.—Samples of the clay parget or daub from the kilns, and of the ground Bunter sandstone used in its preparation. (782)

3.—Glazed pebbles and tiles from the kilns. Samples of the glaze formed by the action of the potash in the wood ashes on the silica in the stone, at great heat. For the formation of this glaze *see* William Burton in J. Ward, " Roman Fort at Gelligaer—Discoveries, 1913 " (*Cardiff Nat. Soc. Trans.*, xlvi, pp. 12–13). (782)

## Appendix I.

## REPORT ON PLANT MATERIAL.

By H. A. Hyde, M.A., F.L.S.

*Keeper of the Department of Botany, National Museum of Wales.*

1.—*Specimens labelled "Cherry stones".* These were found to be the woody portions of fruits of a species of Prunus but not Cherry. The stones agreed in size and shape with those of *Prunus spinosa* Linn. (the Sloe) but their surface was somewhat more rugose than usual. Although blackened externally they were found to be very hard; the embryos when present were well preserved and horny. There were two batches of so-called "cherry stones": included with one batch were fragments of the shells of Hazel nuts (*Corylus Avellana* Linn.).

2.—*Charcoal from Hypocaust.* This was identified as follows:

(a) Oak (*Quercus Robur* Linn. or *Q sessiliflora* Salisb.) Twenty-four fragments varying in size from 3 cms. in radial diameter downwards. Most pieces were from branches or stems of fair size which, as judged by the average number of five rings to the linear centimetre, had been growing fairly rapidly before felling.

(b) Hazel. Two fragments, the larger 1 cm. across.

(c) Ash (*Fraxinus excelsior* Linn). One fragment 5.5 mm. across, displaying only parts of two annual rings, but unmistakable in its identity.

3.—*Charcoal from the tile and pottery kilns.*

(a) Over one hundred separate oak fragments were identified, and a large quantity of minute fragments also present in the charcoal from the same source belonged undoubtedly to this species. The largest fragment examined measured 4 cm. across and showed evidence of fairly rapid growth (four rings to 1 cm. radius). One other fragment measured almost as much across, with rings averaging $2\frac{1}{2}$ to 1 cm. radius, indicating distinctly fast growth. The arcs of the annual rings in these and other big fragments were so flat that it was impossible to estimate their radius of curvature, but it was clearly large. Other fragments, as was to be expected, were derived from stems or branches of an inch or two in diameter upwards. It would appear, therefore, that, while, as seems usually to have been the case, brushwood and perhaps coppice wood were used for heating the

hypocaust, the larger trees being left to stand or used for other purposes, woods were being clear felled, and timber of considerable size was being used, to fire the kilns.

(b) Hazel. Nine fragments, the largest from a stem 3 cms. in diameter, and four irregular pieces, the largest 3–4 cms. across, belonged to this tree, as did probably a number of irregularly shaped pieces of similar size and macroscopic appearance.

4.—*Oak chip from concrete floor.* The largest piece (about 1 cm. across) was so brittle that it snapped easily between the fingers. The large vessels of this wood possessed no cellular infilling (tyloses) showing that the wood was sapwood : this was in agreement with the colour, which had the straw tint of freshly-cut oak sapwood.

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## Appendix II.

## REPORT ON THE ANIMAL REMAINS.

By Lionel F. Cowley, M.Sc.

*Assistant Keeper, Department of Zoology, National Museum of Wales.*

The material submitted to me for examination was in a very fragmentary condition. The bones represented Ox, Pig, Deer, Sheep, and a number of Birds. There were also five species of Mollusca present in the material.

The Ox (probably *Bos taurus* var *longifrons* Lydd., the Celtic Shorthorn) is represented by numerous portions of bones—four portions of lower jaws, of which three have teeth attached ; three molar teeth of the upper series ; distal end of right metacarpal ; distal end of left metatarsal ; proximal end of left metacarpal ; portion of lumbar and thoracic vertebræ ; two scapulæ both of left side ; portions of left calcaneum, pelvic girdle and ribs.

The remains of the Wild Boar (*Sus scrofa* Linn.) consist of a portion of the right half of the lower jaw with three incisors, canine (tusk), and the second premolar tooth. There are also several portions of canine and incisor teeth and also one complete molar tooth.

The Red Deer (*Cervus elaphus* Linn.) is represented by an antler (pricket) of the first year. This had been filed and polished and no doubt used as a tool of some kind.

The Sheep (*Ovis aries* Linn.) is represented by an incomplete metacarpal bone of the right side and a few fragments of ribs.

The bird remains have not been identified but there are several species represented.

The shells of the Mollusca were in some cases fragmentary whilst others were complete. Five species are represented—the Oyster (*Ostrea edulis* Linn.), the Mussel (*Mytilus edulis* Linn.), the Garden Snail (*Helix aspersa* Mull.), the Grove Snail (*Cepæa nemoralis* Linn.) and the Swan Mussel (*Anodonta cygnea* Linn.).

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## Appendix III.

## THE BRONZE AGE BURIAL.

In the course of the excavation of the barrack-buildings in 1909 a Bronze Age burial was discovered near the north-east end of the north enclosure-wall of the buildings, and about ten yards from it.[1]

Details of the burial are unfortunately largely wanting. All the vessels were apparently in association, and stood together on the old ground level, but there was no trace of any enclosing mound. The site, in fact, is unusually placed for a burial of the period, halfway down the slope towards the River Dee, and no attempt appears to have been made to obtain the prominent position generally preferred. Any mound, if one ever existed, may have been removed by the intensive cultivation to which the Wall Lock Field has been subjected, or was perhaps destroyed by the Romans in the erection of the buildings nearby.

Although only one of the vessels (No. 1) is known to have contained calcined bones, in the collection of remains from the burial two individuals were represented. The remains were very kindly examined by Sir Arthur Keith, F.R.S., who states:

> "(1) there are no animal bones; (2) most are of a stoutly built man with strong eyebrow ridges and big joints. He may well have been a beaker-man: but one can only suspect his race; (3) the bones—not so many—of a child

[1] The finds from this burial are not part of the Holt Collection, but are accessed as a separate donation by T. A. Acton under the Museum number 24.572.

about 8–10 years of age. A fragment of the upper jaw gives the age; and so do the thin cranial bones."

The vessels themselves show widely different features (Fig. 80):

(1) Cinerary urn of light brown ware, 7½ inches high. Belongs to phase I of Abercromby's classification of cinerary urns, the chief features of which are a narrow rim, with a strongly curved neck and well-marked shoulder, below which the body takes the form of an inverted truncated cone.[1] The vessel shows a number of interesting features: impressed maggot pattern of Neolithic origin, and a series of elongated oval depressions on the shoulder regarded by Dr. Cyril Fox as a debased descendant from the lugged food vessels characteristic of Northern England.[2] The urn was found inverted, and full of calcined bones.

(2) Cinerary urn of yellow-buff ware, height 5¾ inches. Both in regard to form and ornament this vessel is of debased type. The moulding of rim and neck is weak, and the decoration, consisting of a series of panels of twisted thong ornament around the neck, is irregularly arranged.

(3) "Incense cup" of grey-brown ware, height 3 inches. A featureless vessel, devoid of ornament. Its exact relation to the cineraries—*i.e.* whether it was enclosed in one of them, or standing free—is not known.

(4) A food vessel, of which only rim-fragments remain. Of pinkish-buff ware, decorated with what appears to be debased maggot pattern on the external rim and neck. Abercromby's type 3.[3]

The conclusions to be drawn from the evidence available are far from certain, but the presence of remains of two individuals, added to the fact that the vessels described fall into two groups, suggests that the four vessels represent two separate interments made at different times.

[1] Abercromby, *Bronze Age Pottery*, ii, p. 8.
[2] *Arch. Camb.*, 1925, p. 182.
[3] Abercromby, *op. cit.*, i, p. 94.

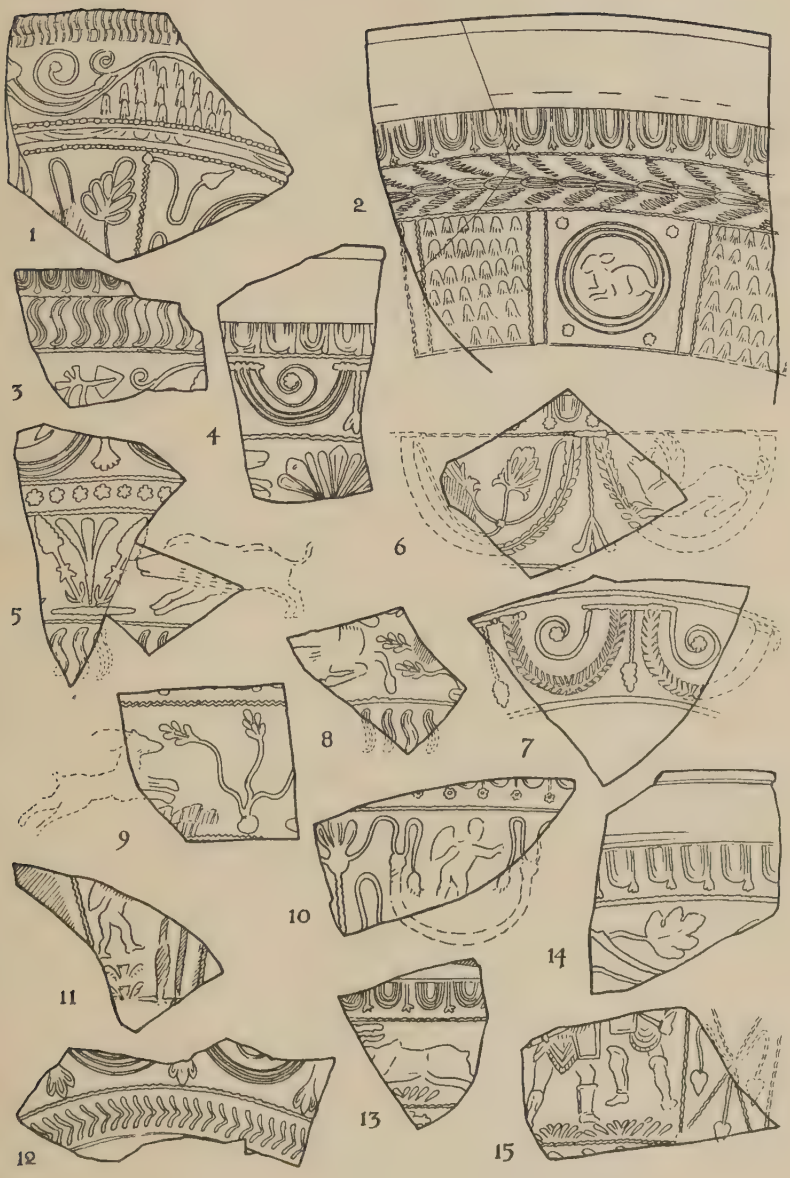



Fig. 34.—Decorated Samian (pp. 98-100). ½.

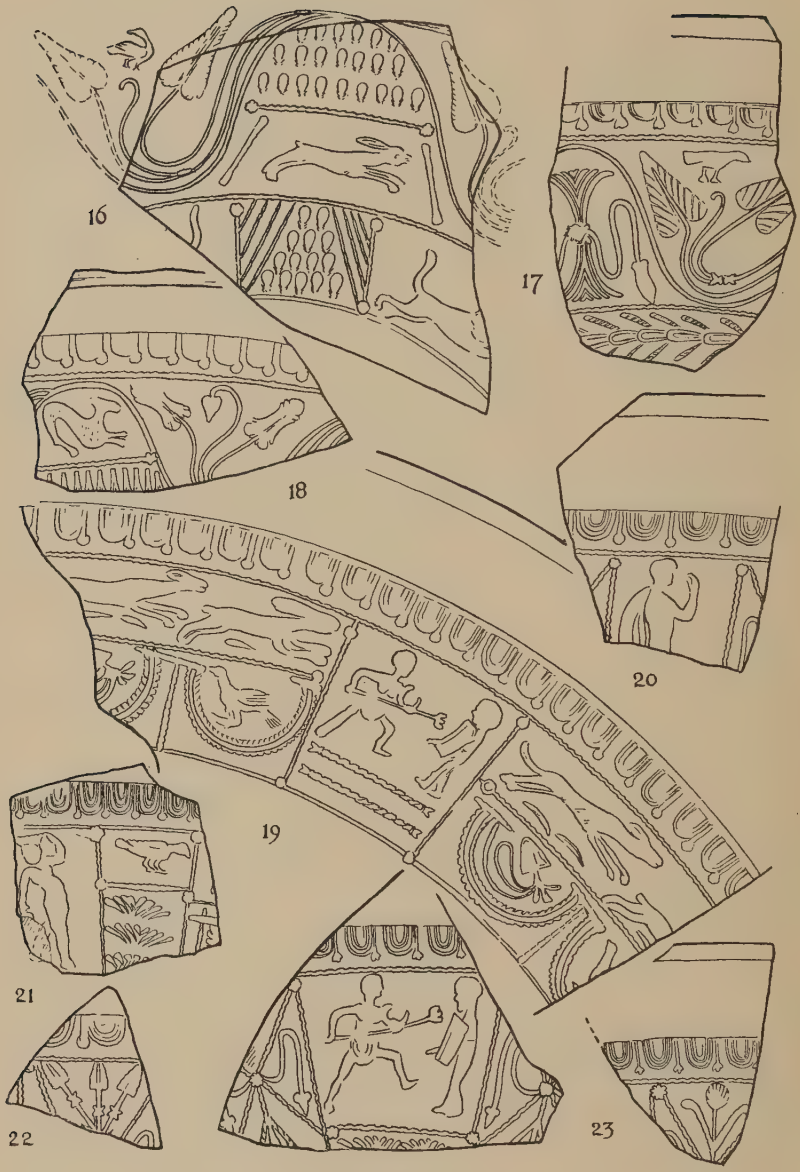



Fig. 35.—Decorated Samian (pp. 100-1). $\frac{1}{2}$.

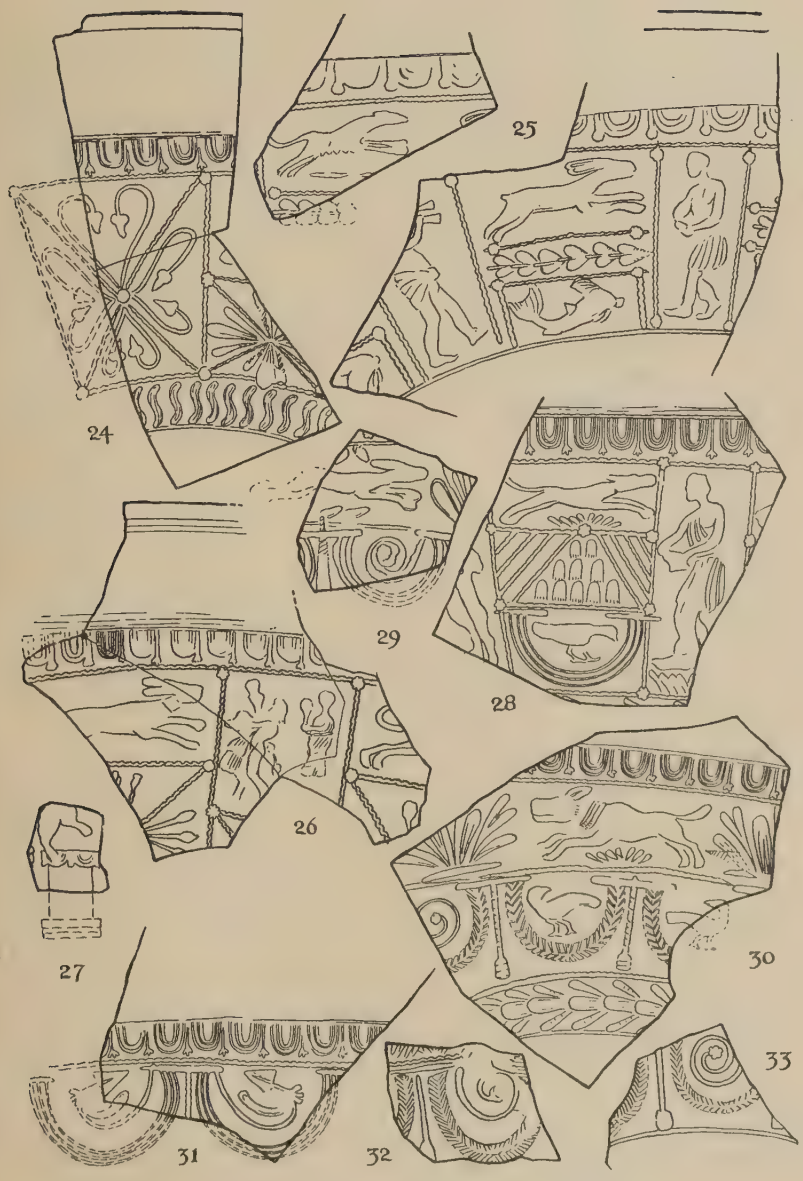



Fig. 36.—Decorated Samian (pp. 101-1). $\frac{1}{2}$.

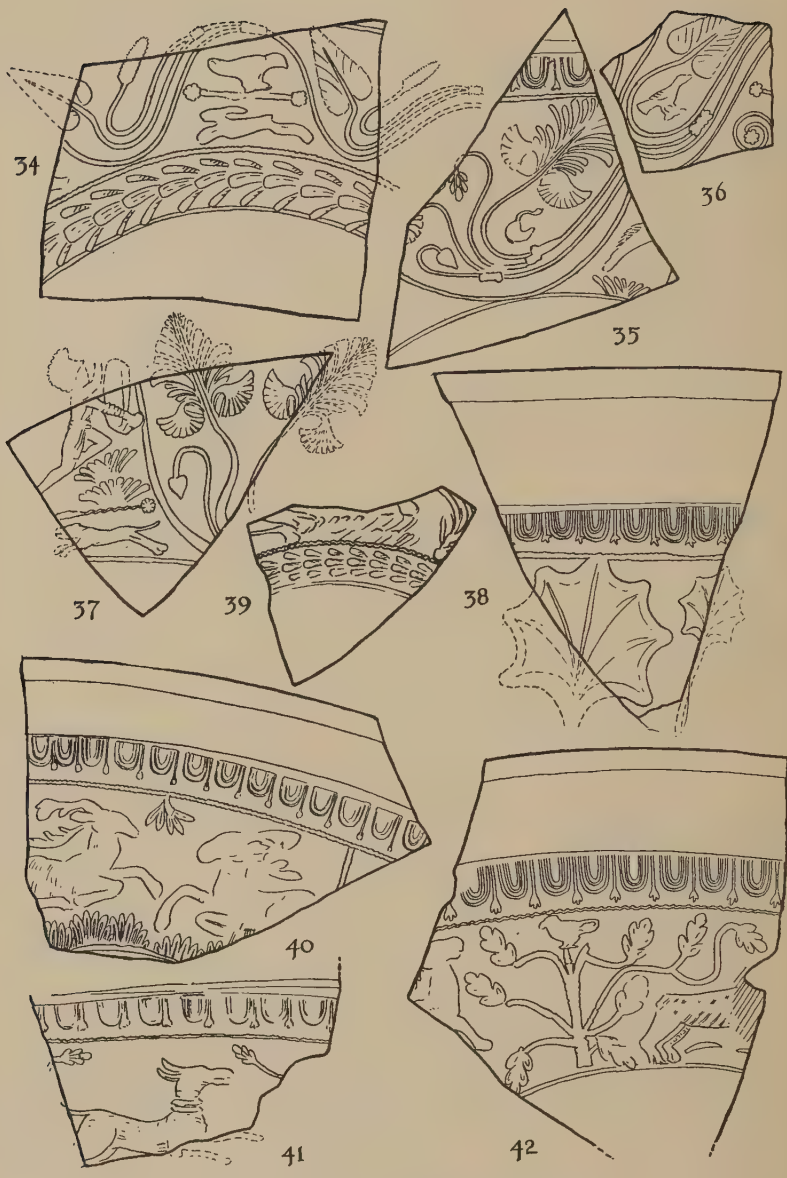



Fig. 37.—Decorated Samian (pp. 102-3). ½.

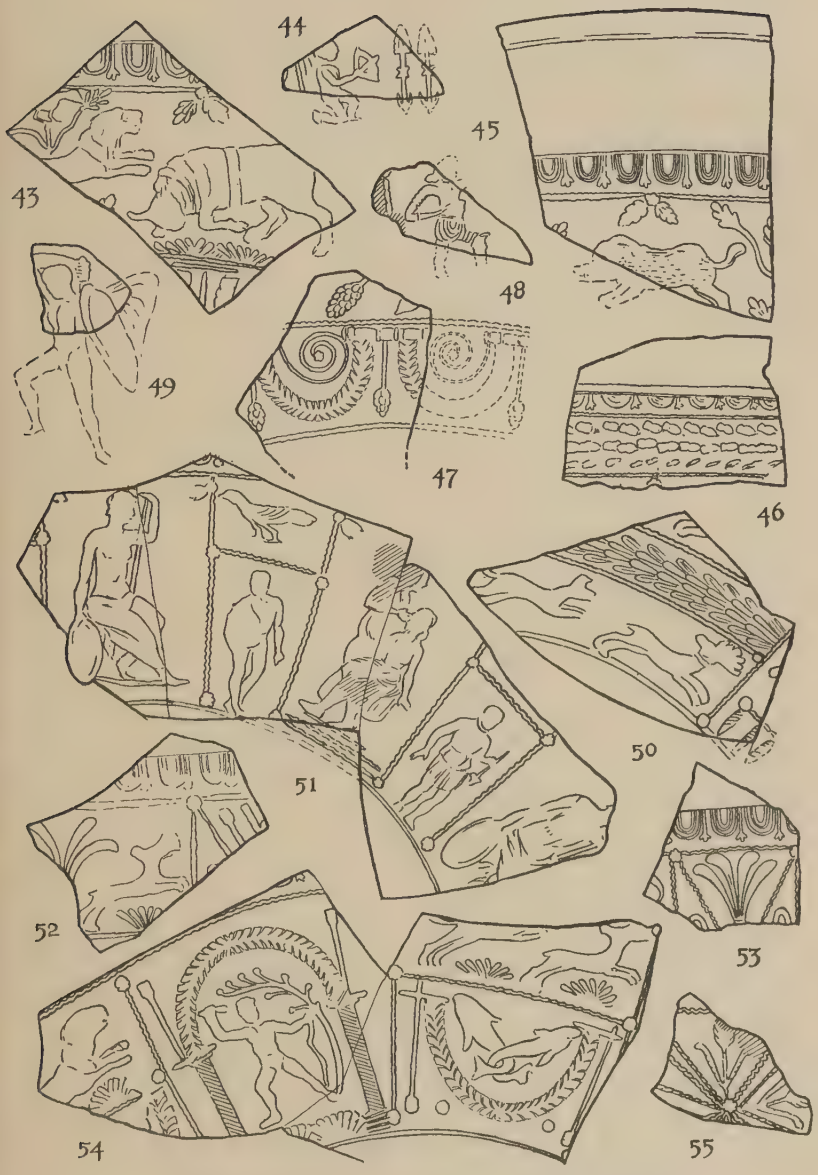



Fig. 38.—Decorated Samian (pp. 103-4). ½.

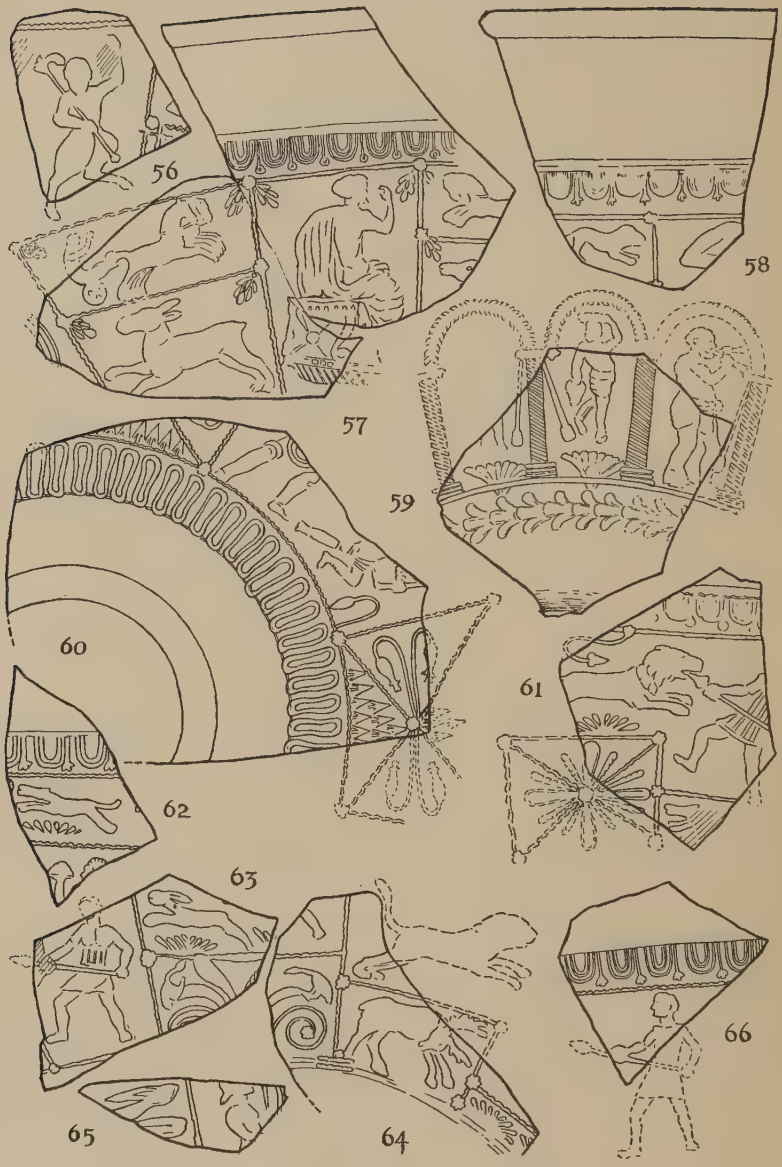



Fig. 39.—Decorated Samian (pp. 104-5). ½.

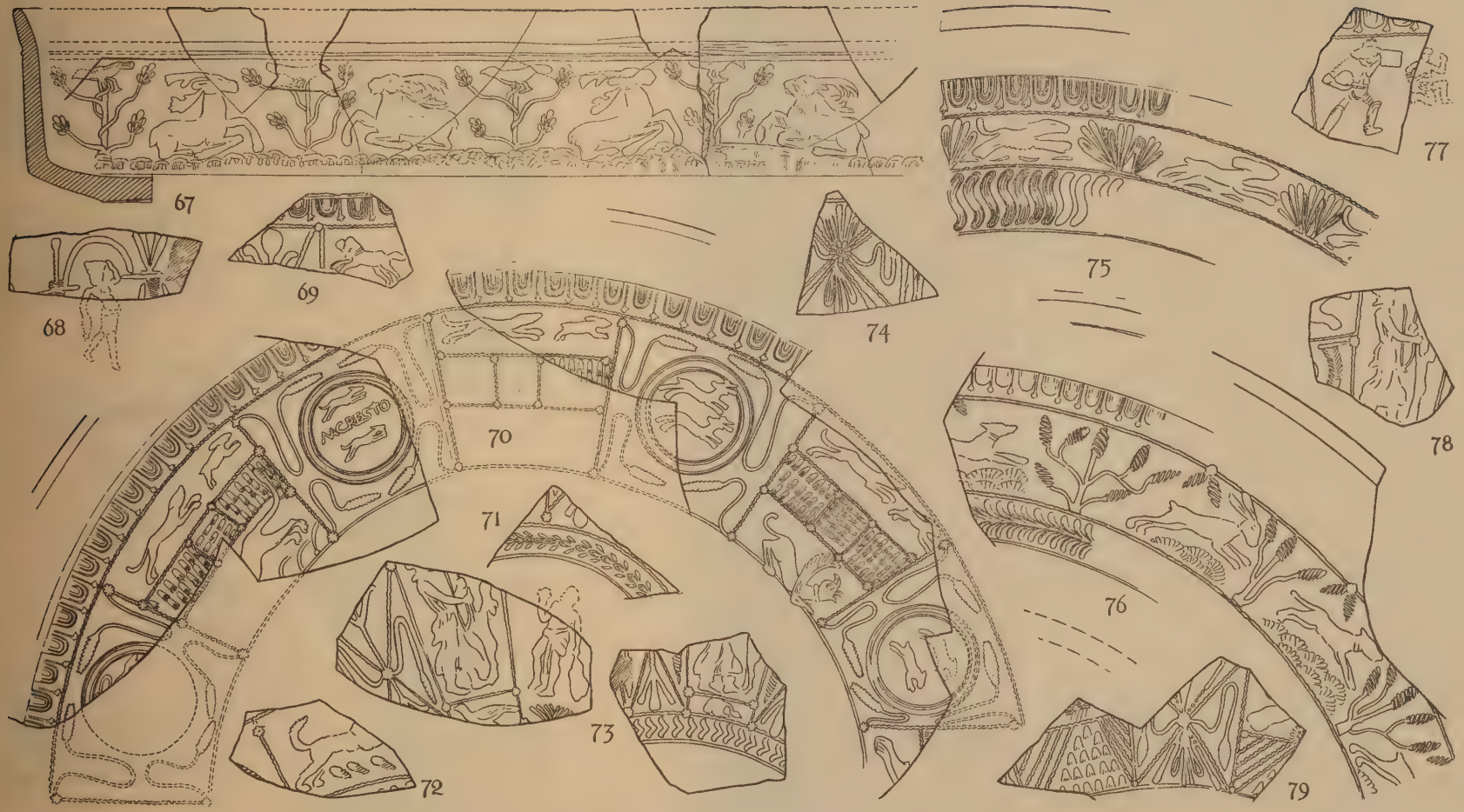



Fig. 40.—Decorated Samian (pp. 106-7). ½.

*To face p. 194.*

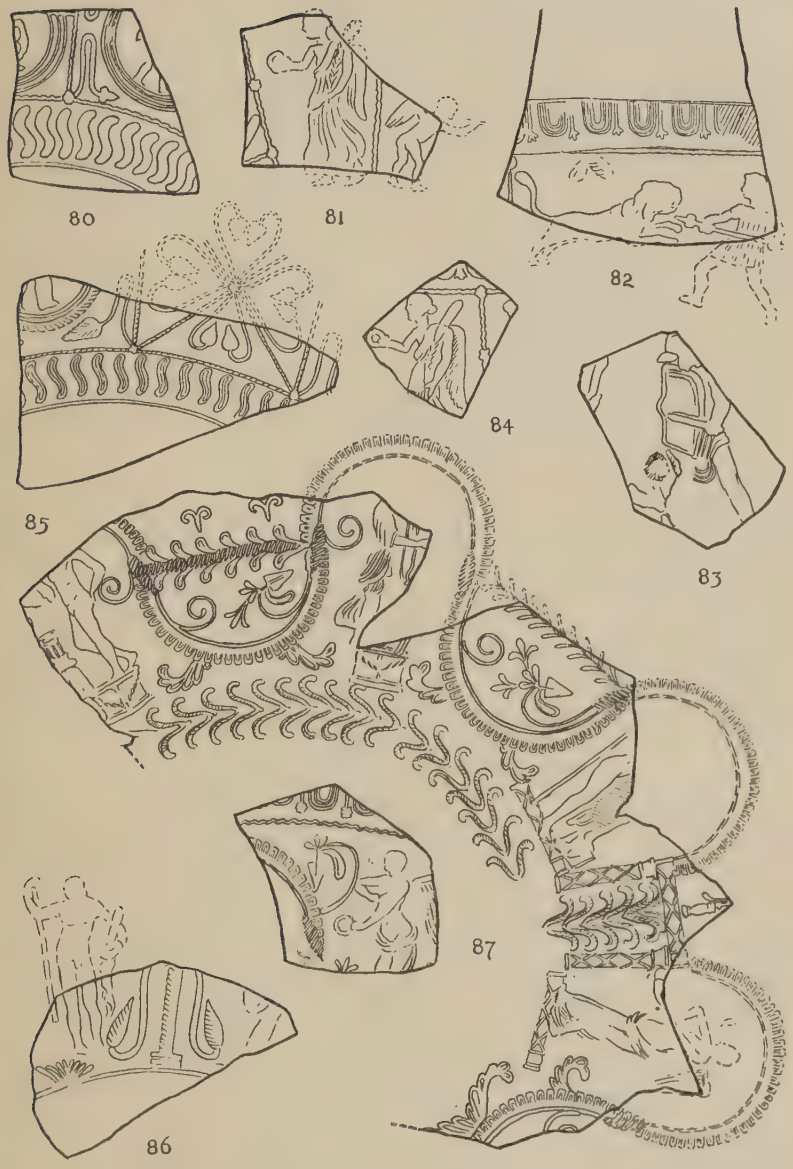



Fig. 41.—Decorated Samian (pp. 107-8). $\frac{1}{2}$.

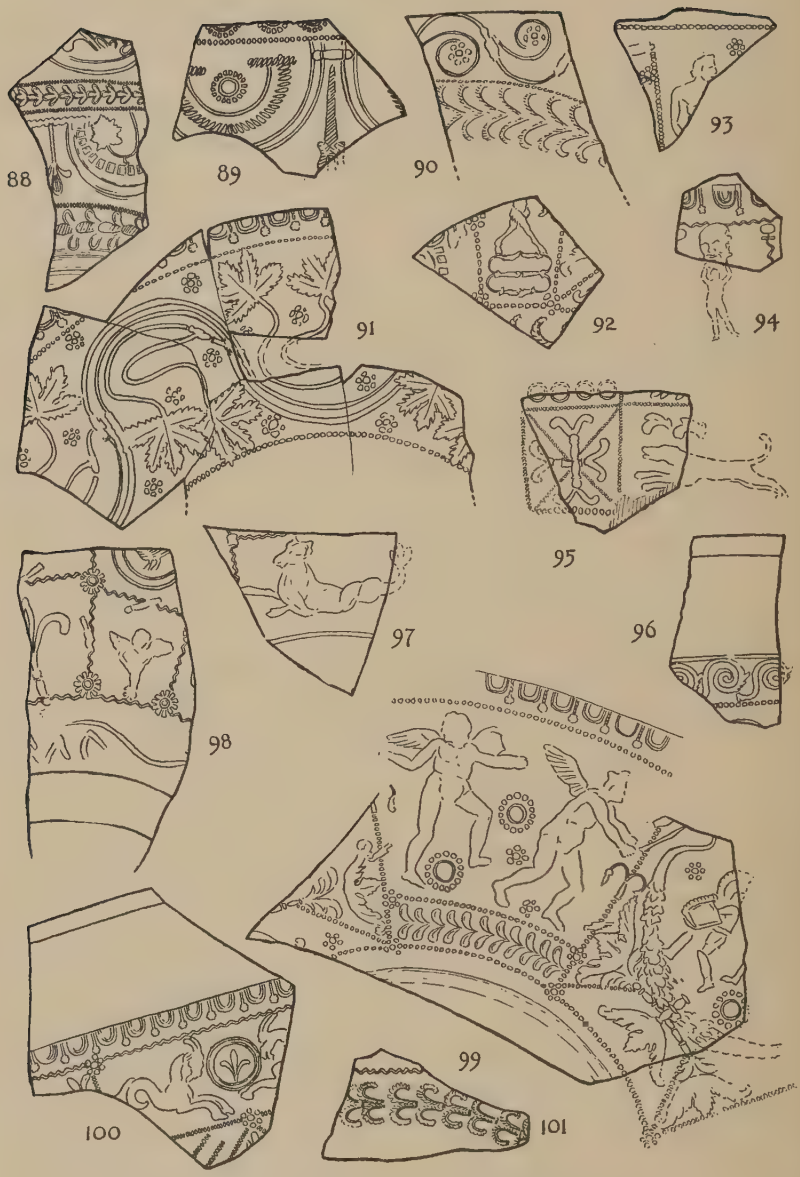



**Fig. 42.—Decorated Samian (pp. 108-10).** $\frac{1}{2}$.

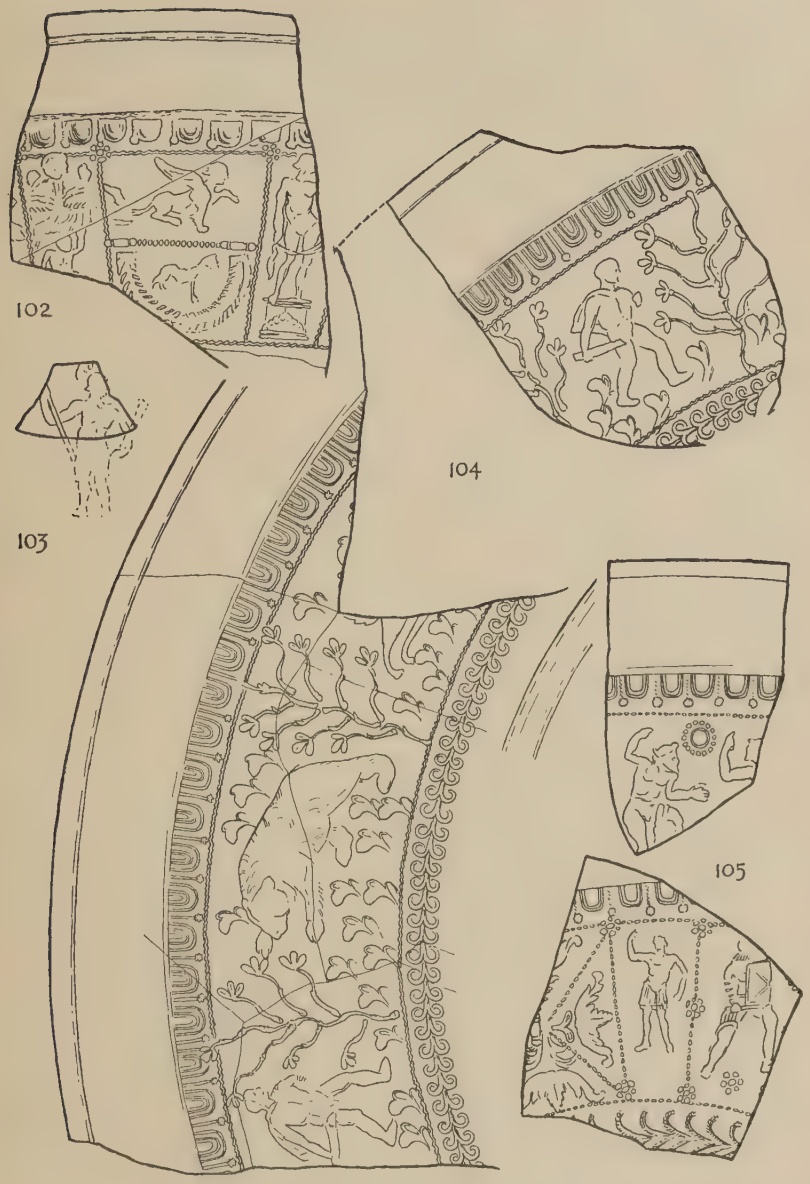



Fig. 43.—Decorated Samian (p. 110). ½.

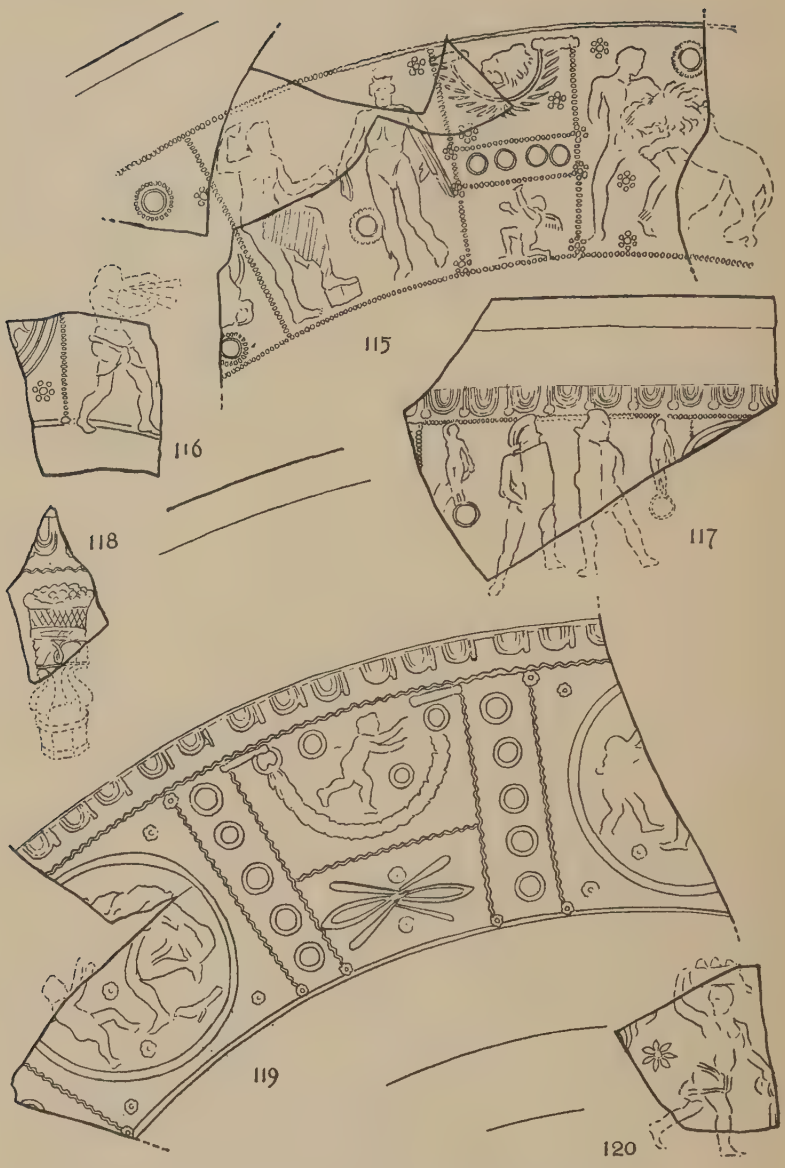



Fig. 45.—Decorated Samian (pp. 112-13). $\frac{1}{2}$.

Fig. 44.—Decorated Samian (pp. 110-12). ½.

*To face p. 198.*

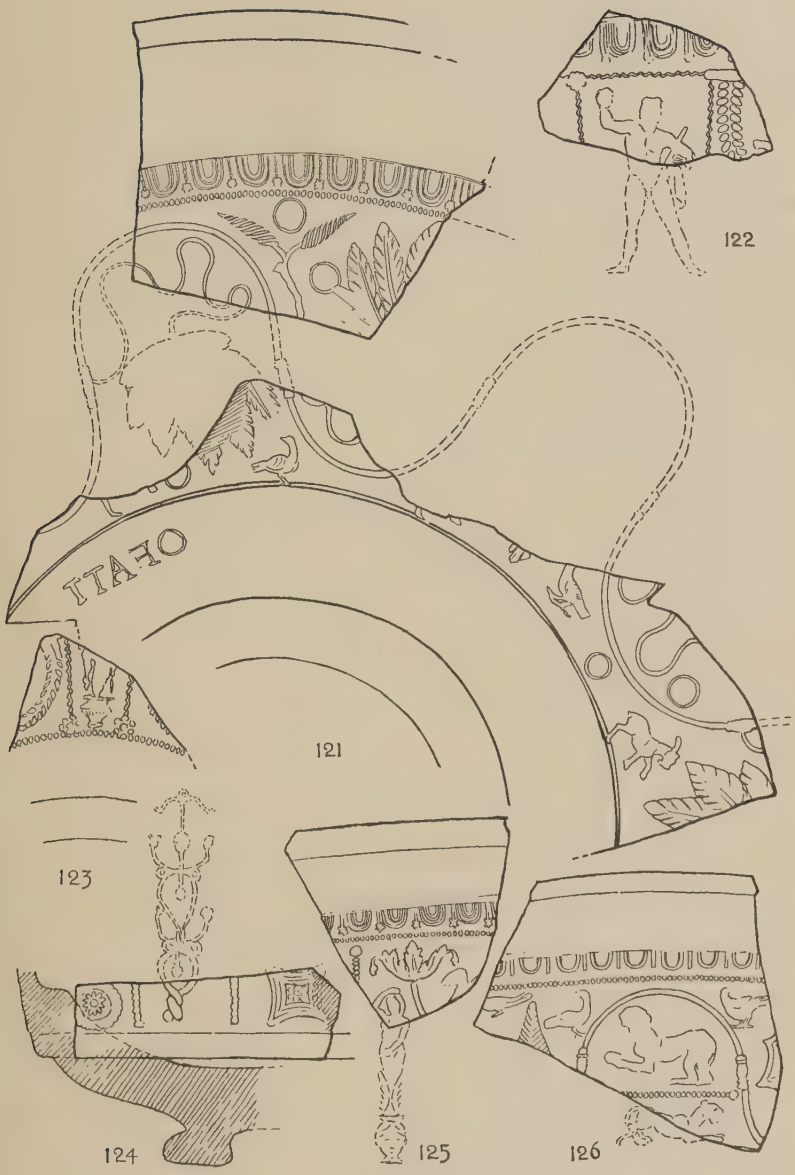



Fig. 46.—Decorated Samian (p. 113). ½.

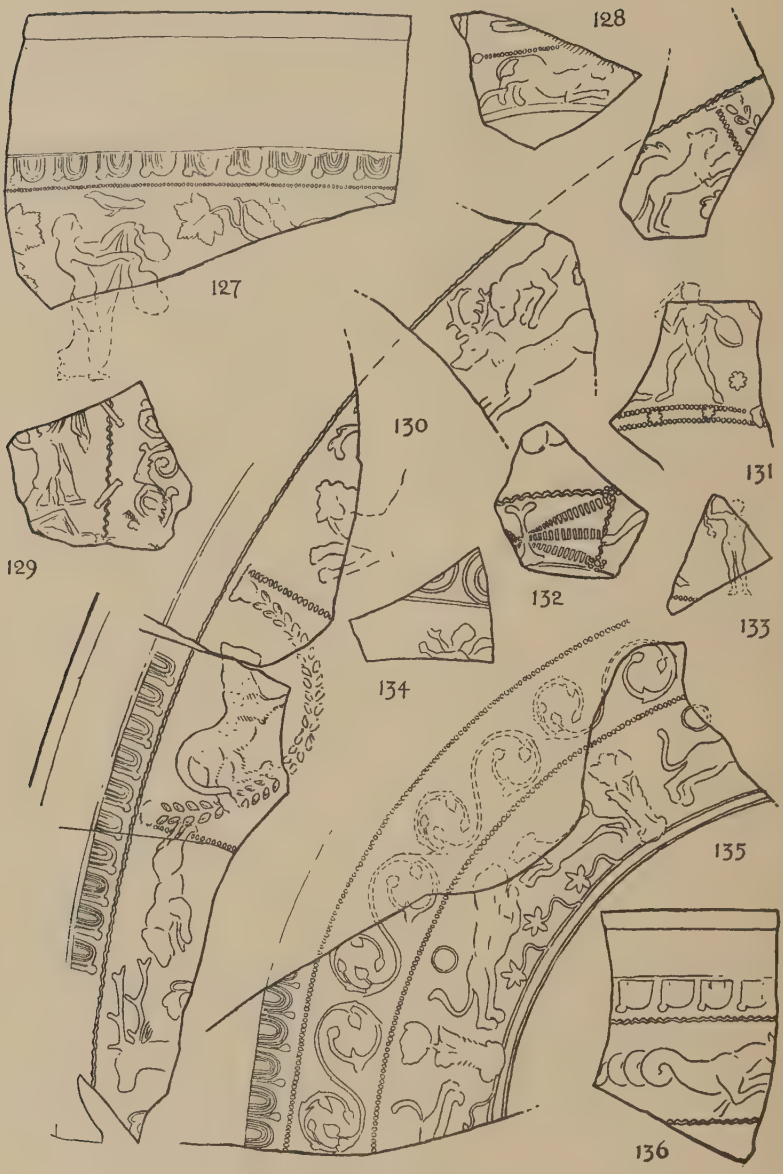



Fig. 47.—Decorated Samian (p. 114). ½.

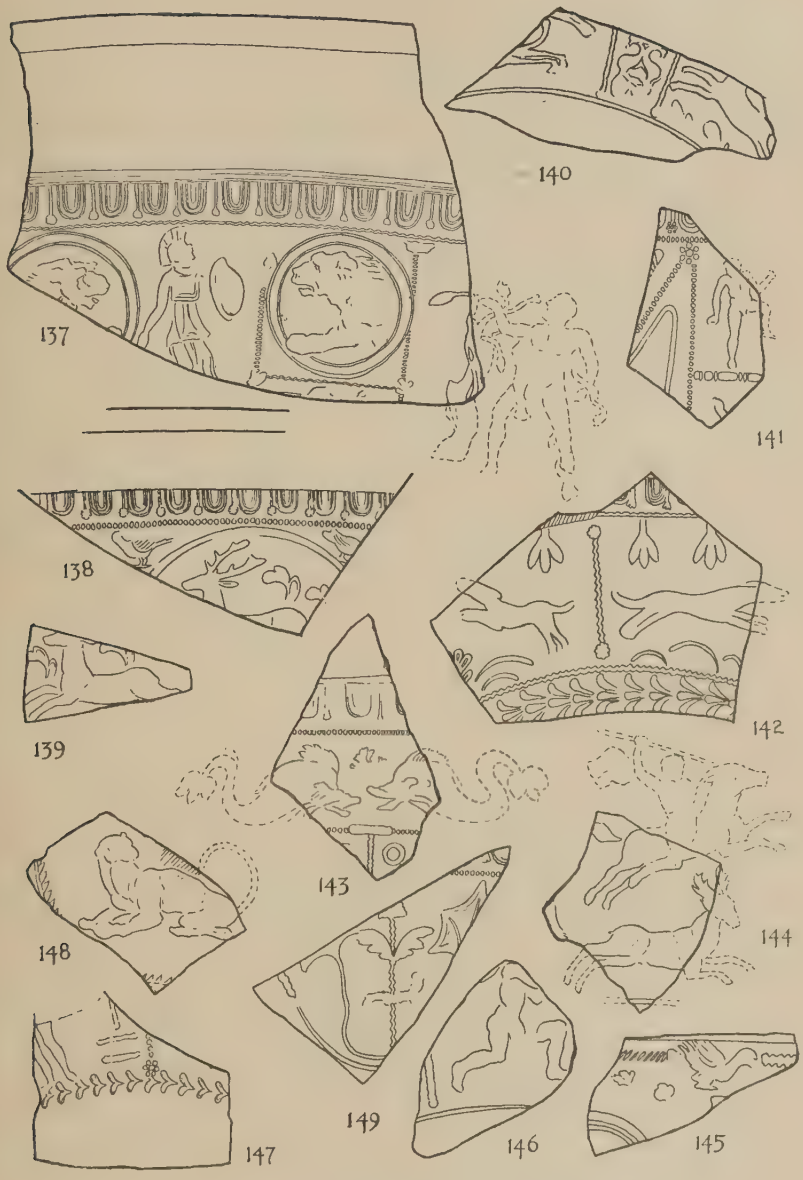



Fig. 48.—Decorated Samian (pp. 115-16). ½.

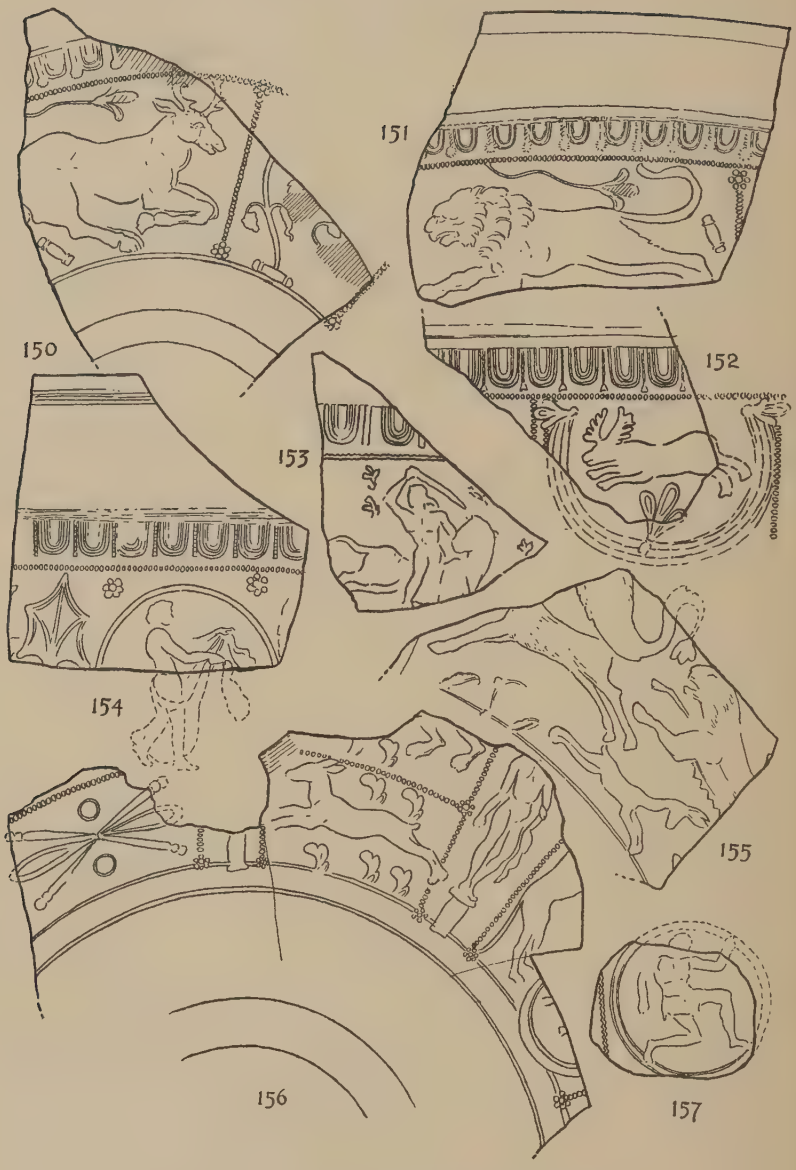



Fig. 49.—Decorated Samian (pp. 116-17). $\frac{1}{2}$.

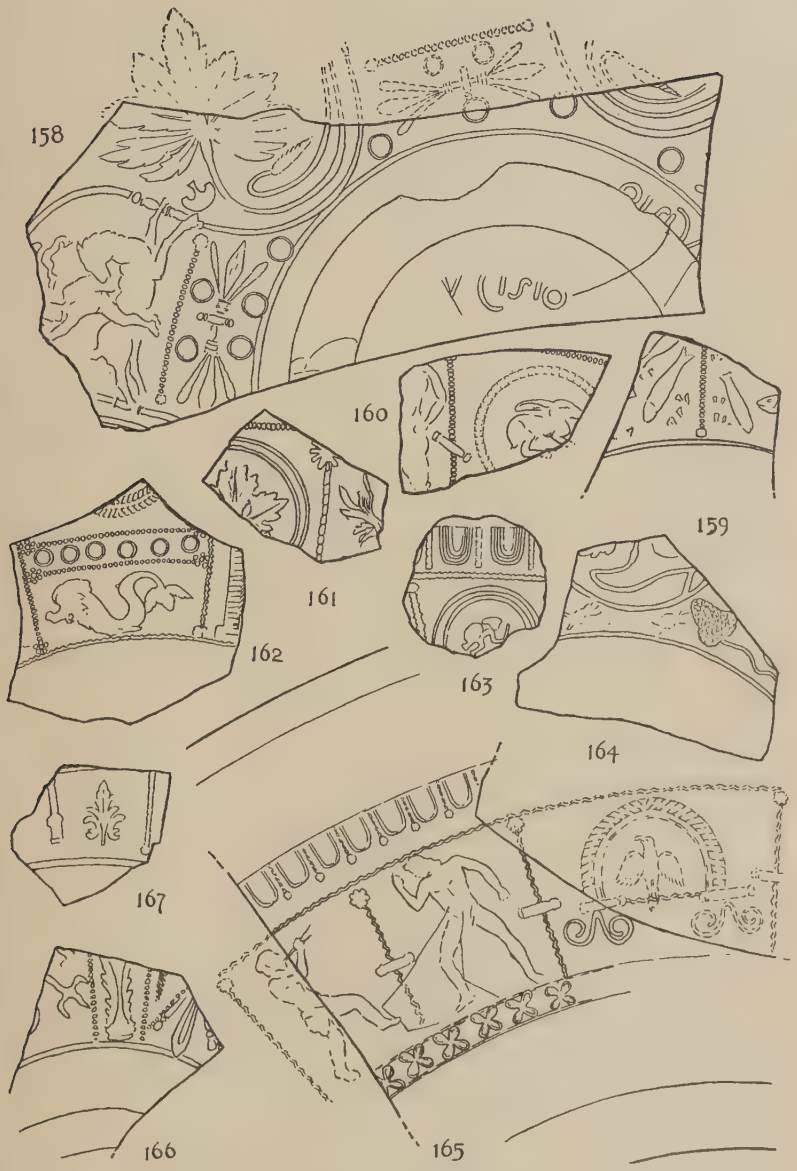



Fig. 50.—Decorated Samian (pp. 117-18). ½.

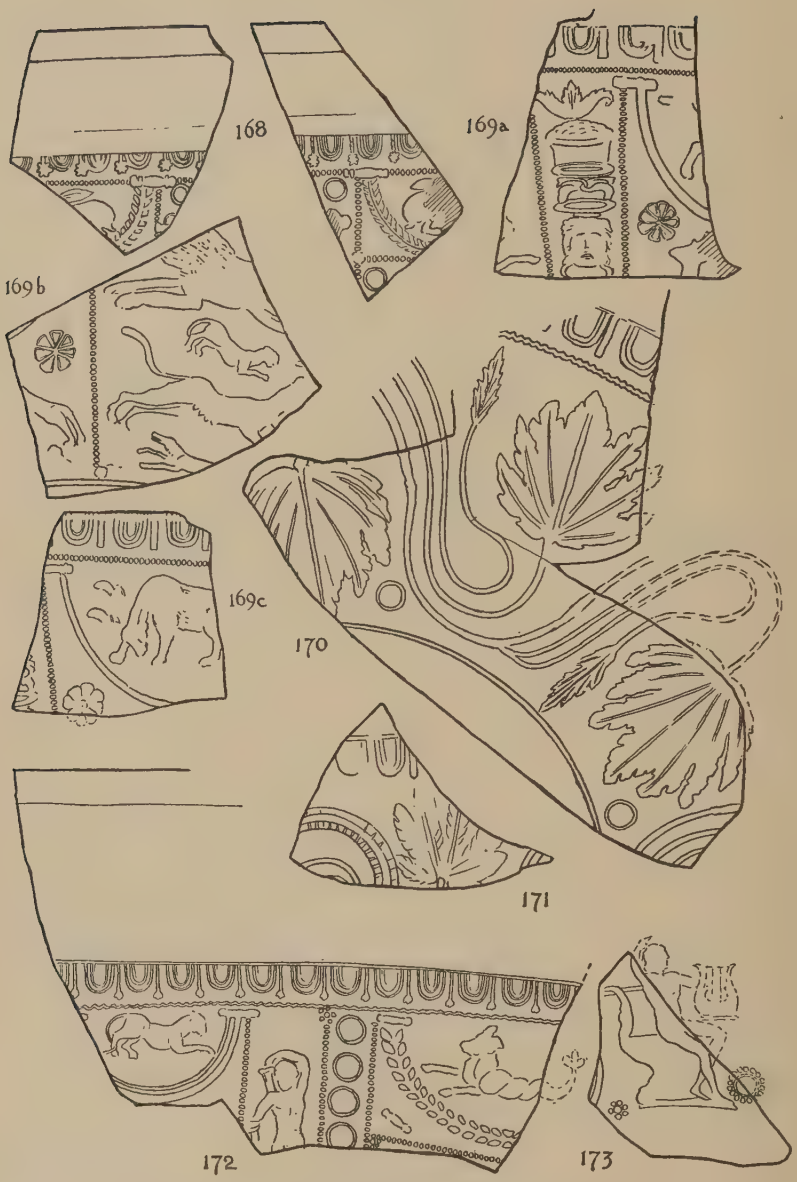



Fig. 51.—Decorated Samian (p. 118). ½.

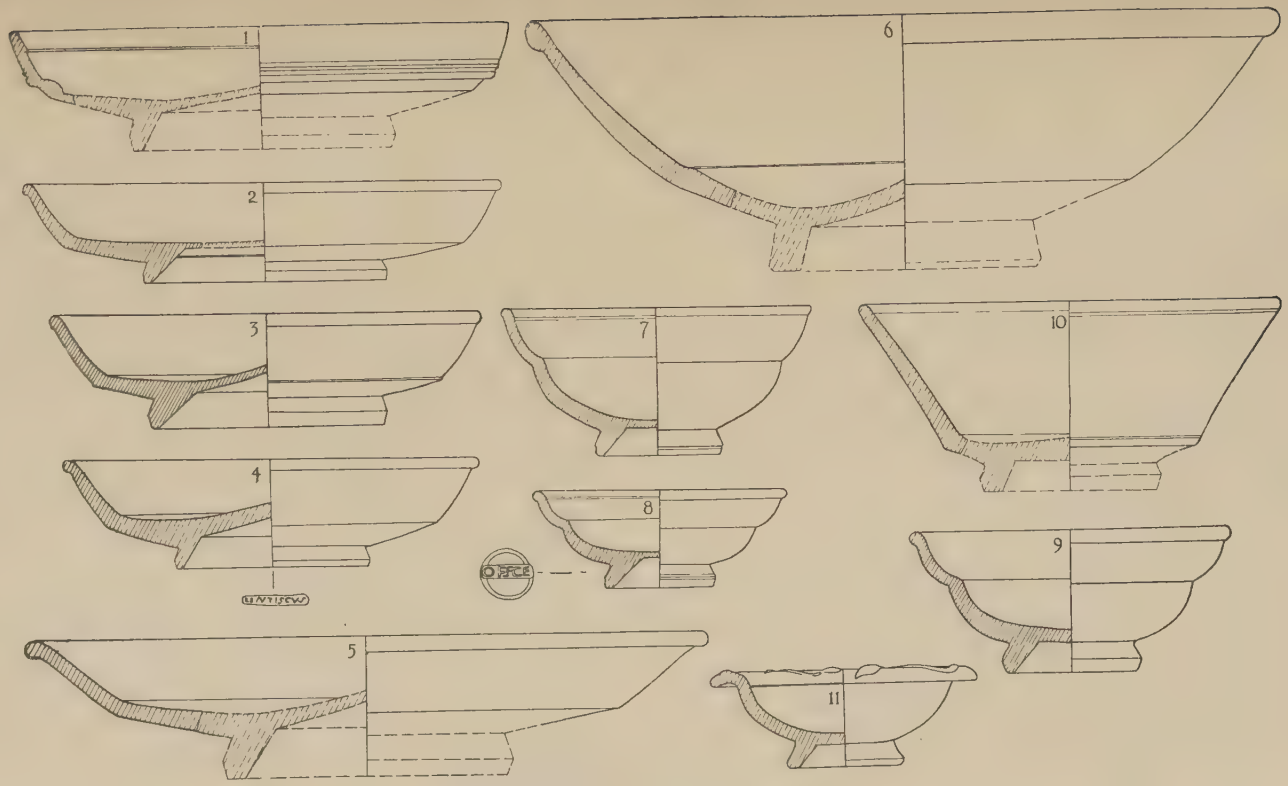



Fig. 52.—Plain Samian (pp. 119-20). $\frac{1}{3}$.

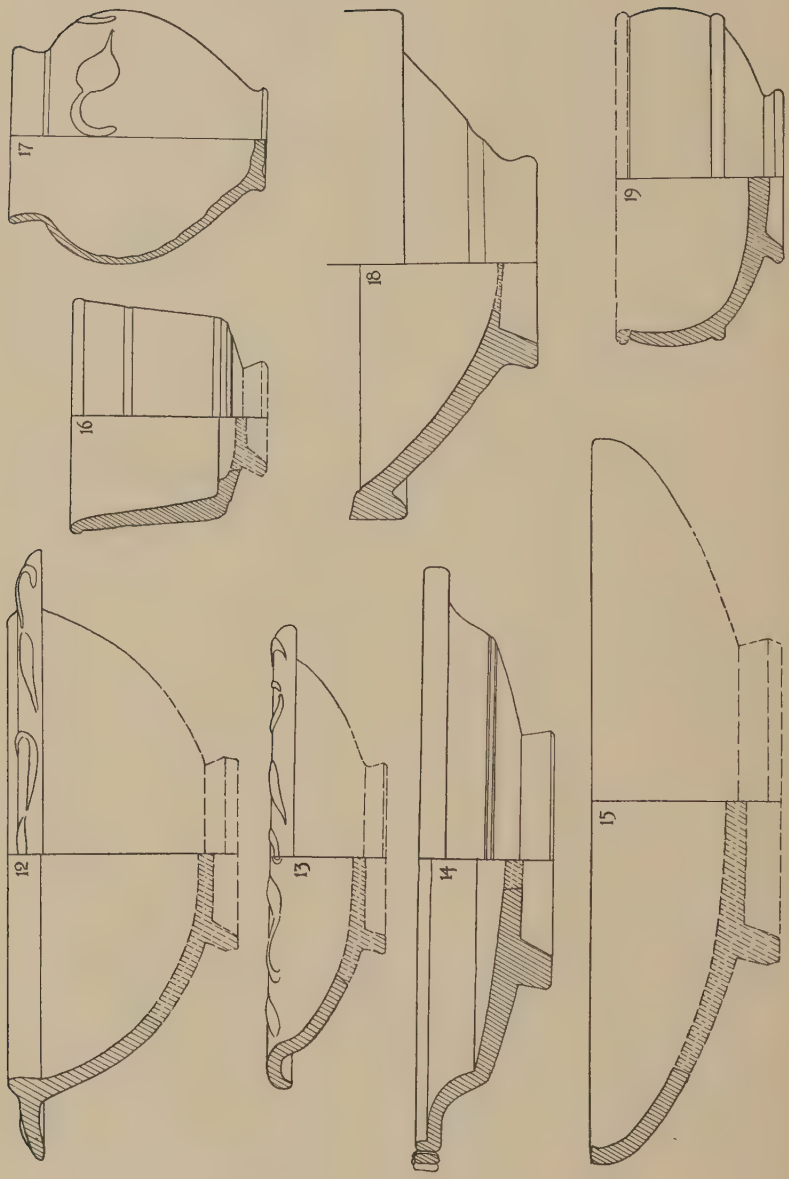



Fig. 53.—Plain Samian (pp. 120-1). $\frac{1}{3}$.

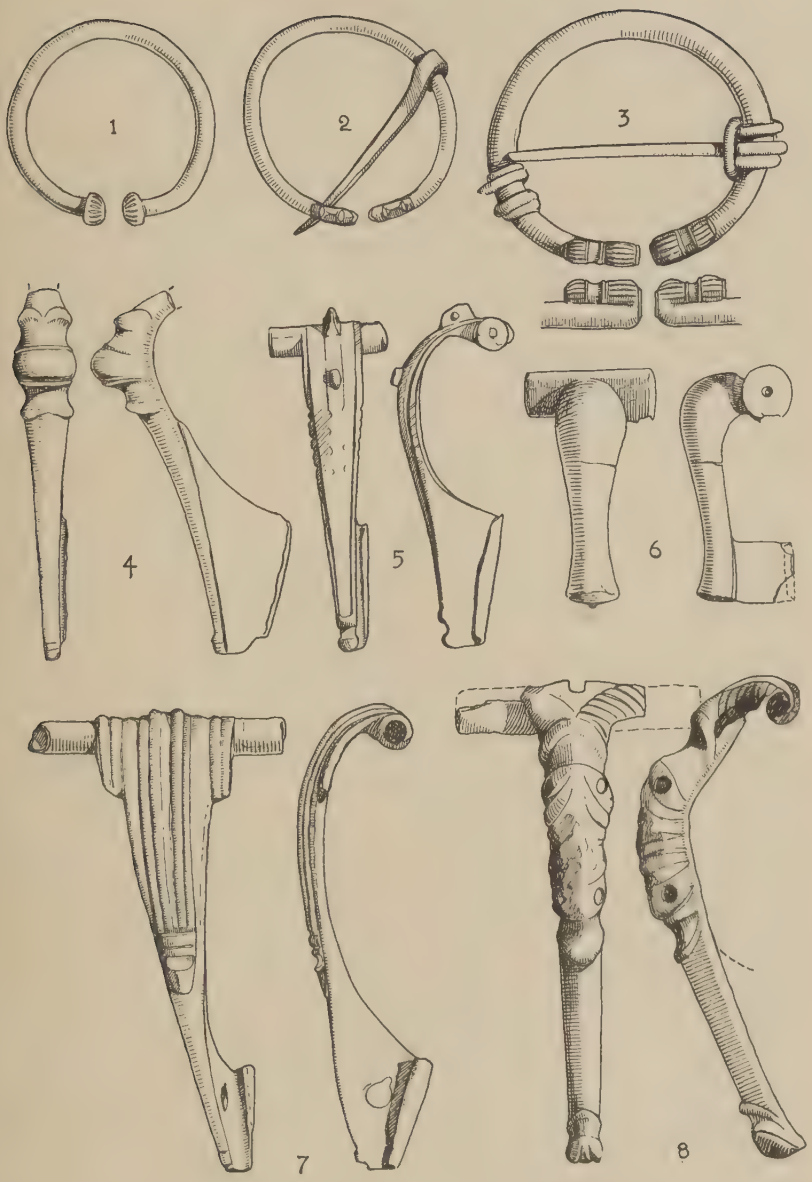



Fig. 54.—Objects of metal (pp. 126-7). $\frac{1}{1}$.

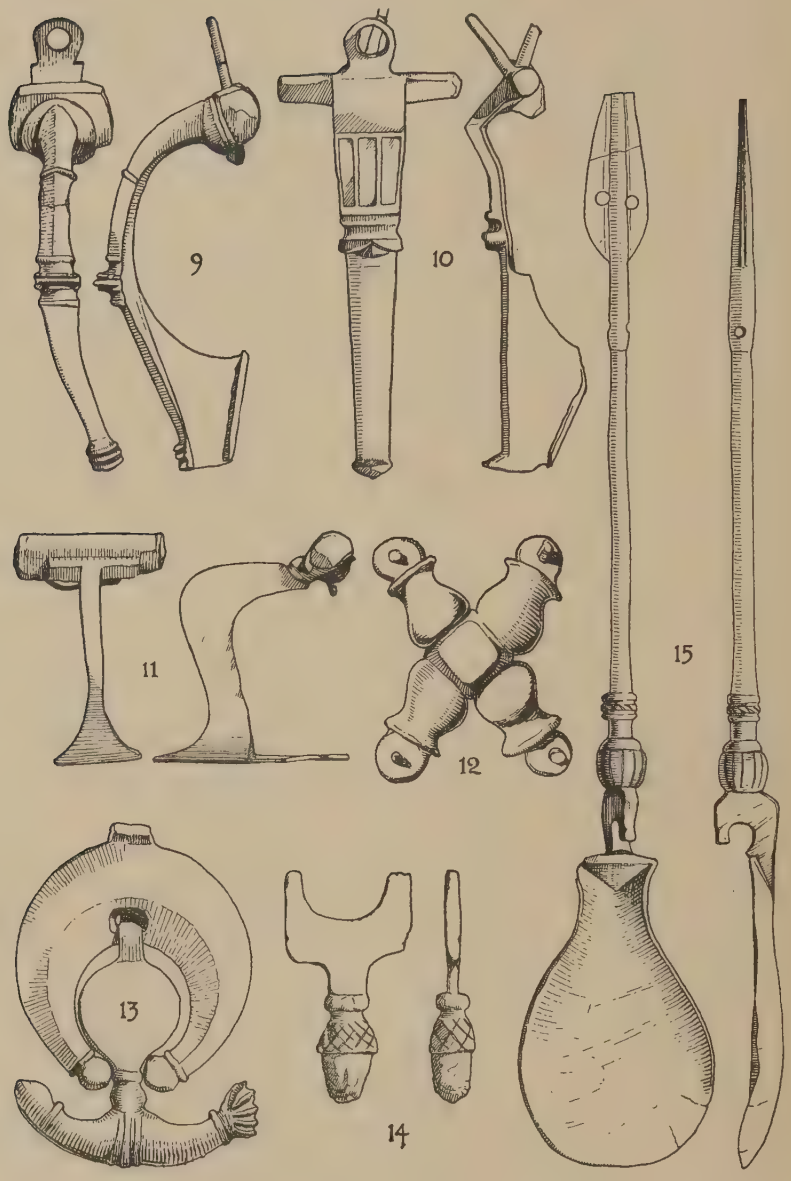



Fig. 55.—Objects of metal (p. 127). $\frac{1}{1}$.

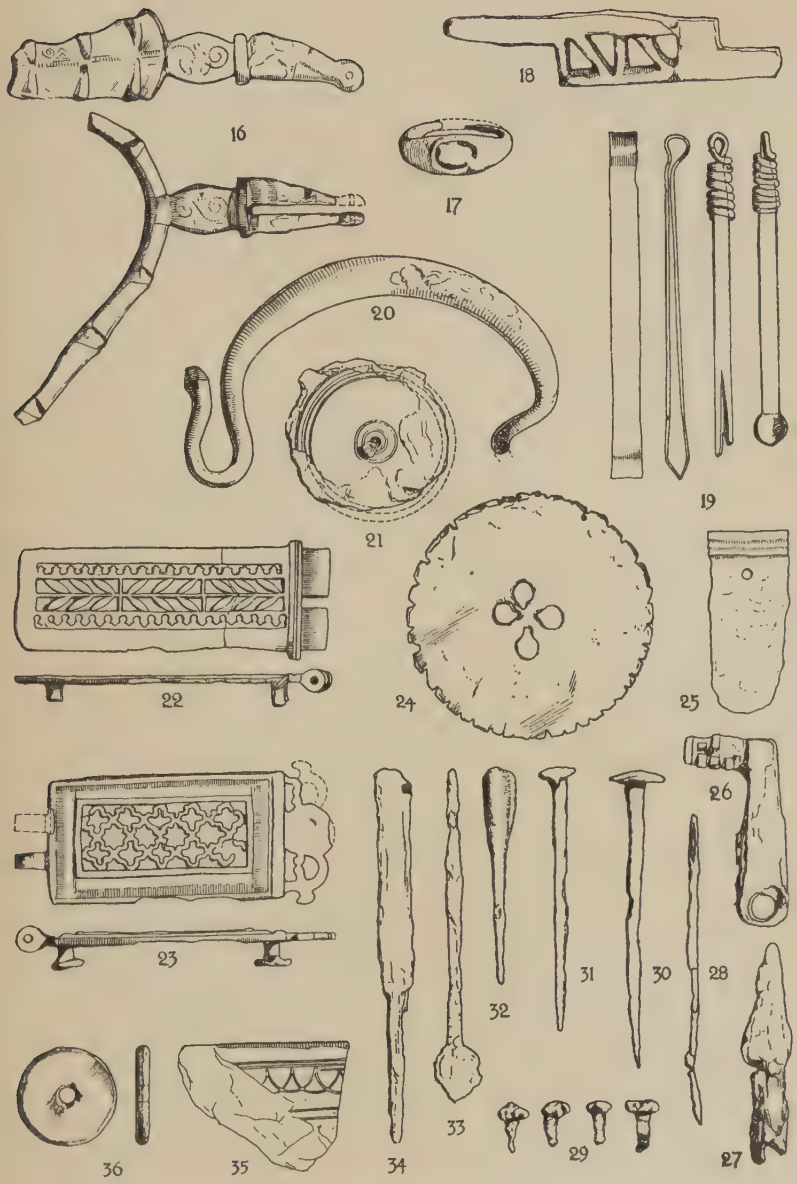



Fig. 56.—Objects of metal, etc. (pp. 127-8). 16-25, $\frac{2}{3}$; 26-36, $\frac{1}{3}$.

P

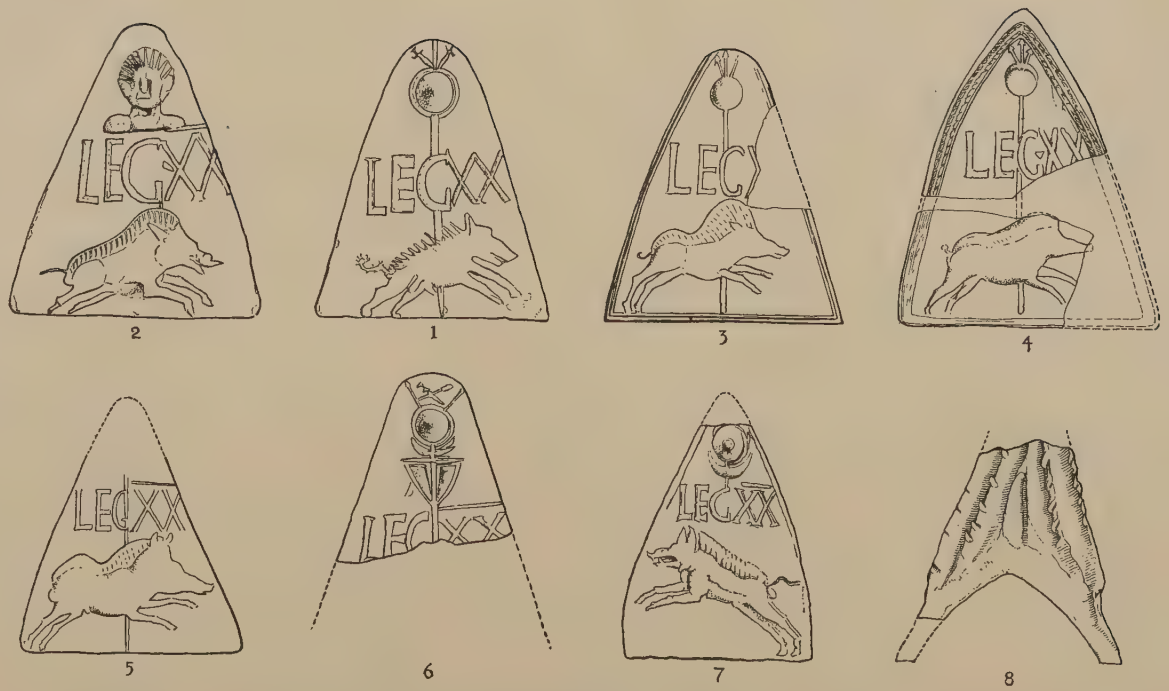



Fig. 58.—Antefixes (pp. 136-9). $\frac{1}{6}$.

Fig. 57. Objects of pottery (pp. 130-1).

*To face p. 210.*

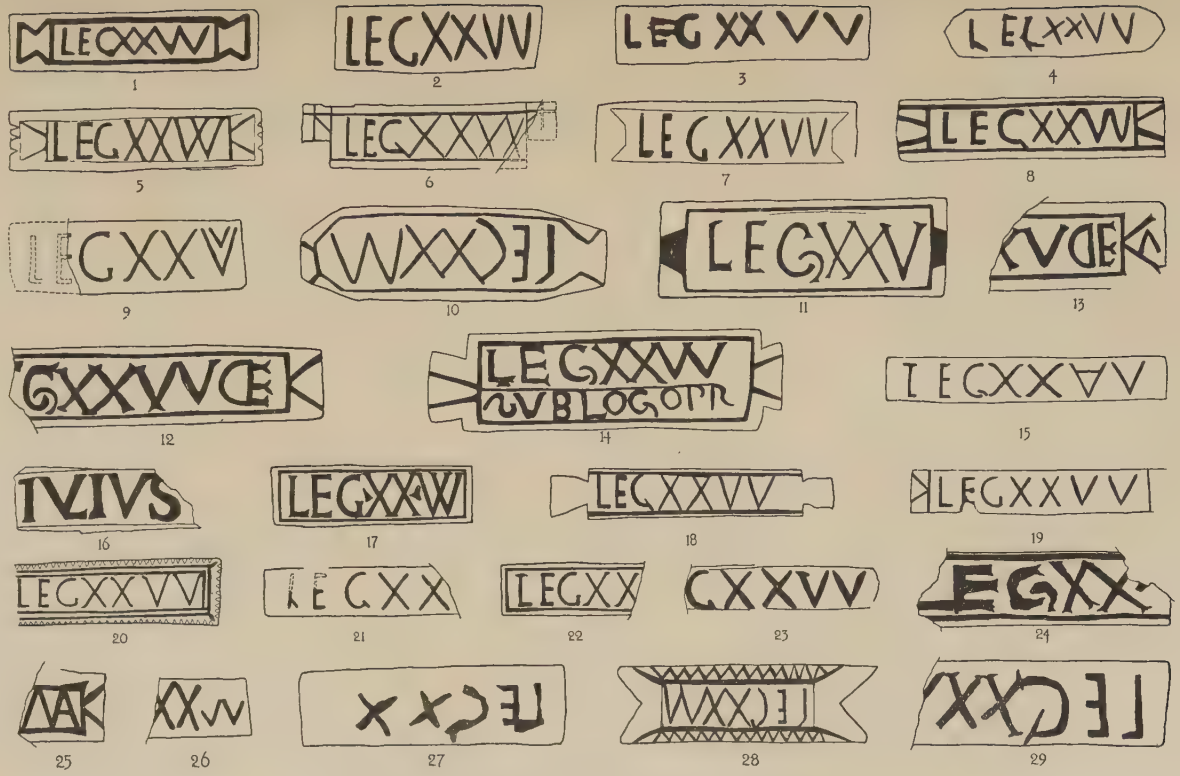


Fig. 59.—Legionary Stamps (pp. 139-43). ¼.

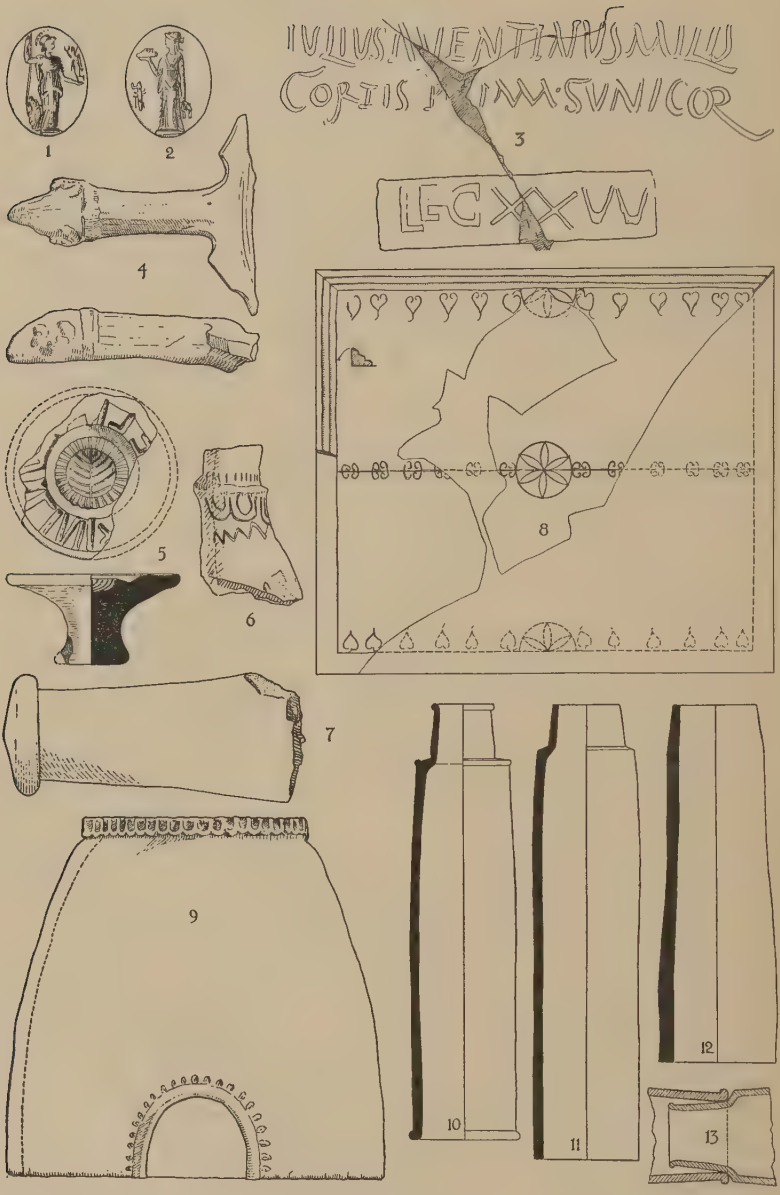



**Fig. 60.—Various.**

1-2, actual size (p. 129); 3, $\frac{1}{4}$ (p. 133); 4, $\frac{1}{4}$ (p. 174); 5-7, $\frac{1}{4}$ (p. 131); 8, $\frac{1}{8}$ (p. 131); 9, $1\frac{1}{2}$ (p. 184); 10-13, $1\frac{1}{2}$ (p. 134).

Fig. 61.—Coarse pottery: mortaria (pp. 146-9). ¼.

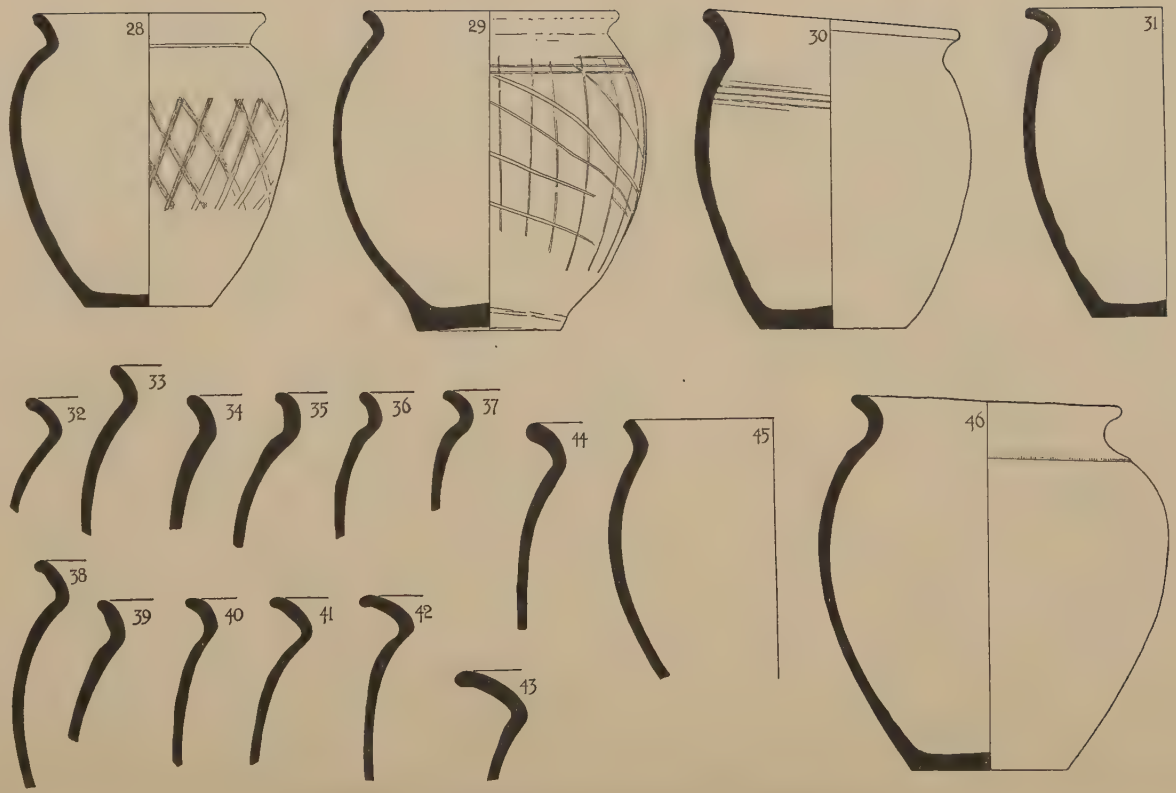



Fig. 62.—Coarse pottery: ollae, etc. (pp. 149-50). ¼.

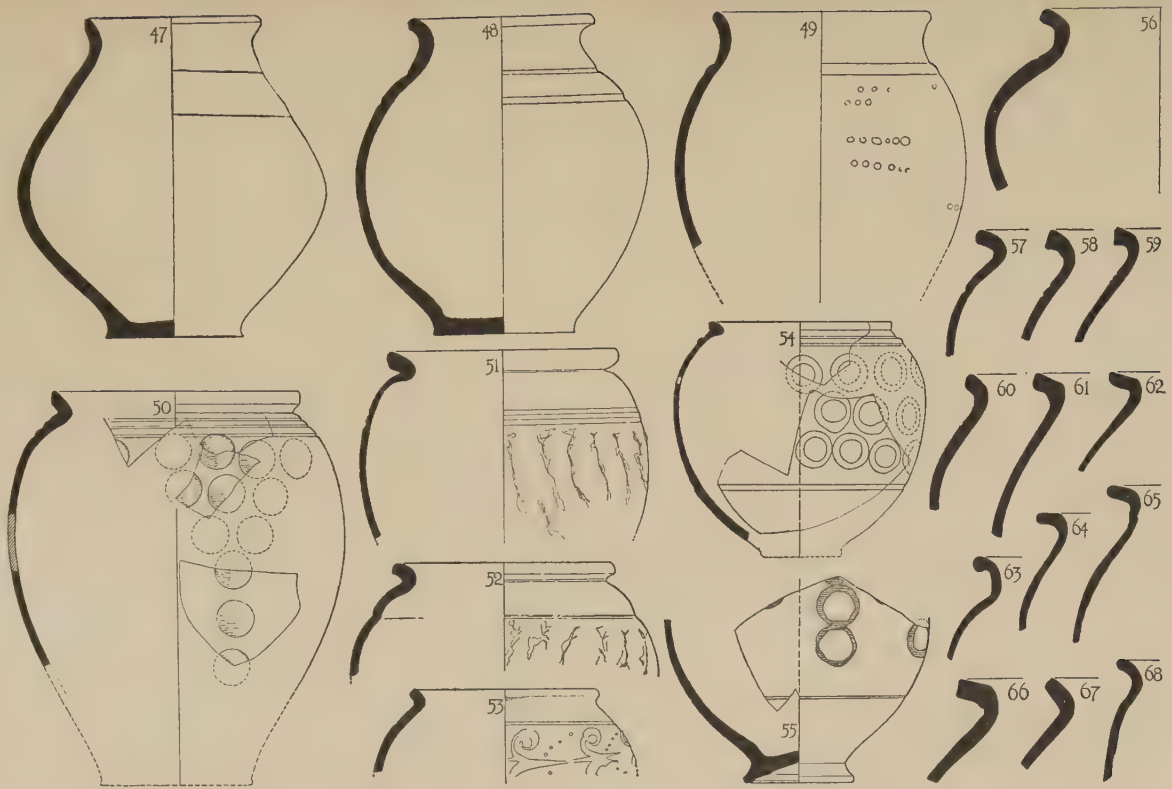



Fig. 63.—Coarse pottery: ollae, etc. (pp. 150-2). ¼.

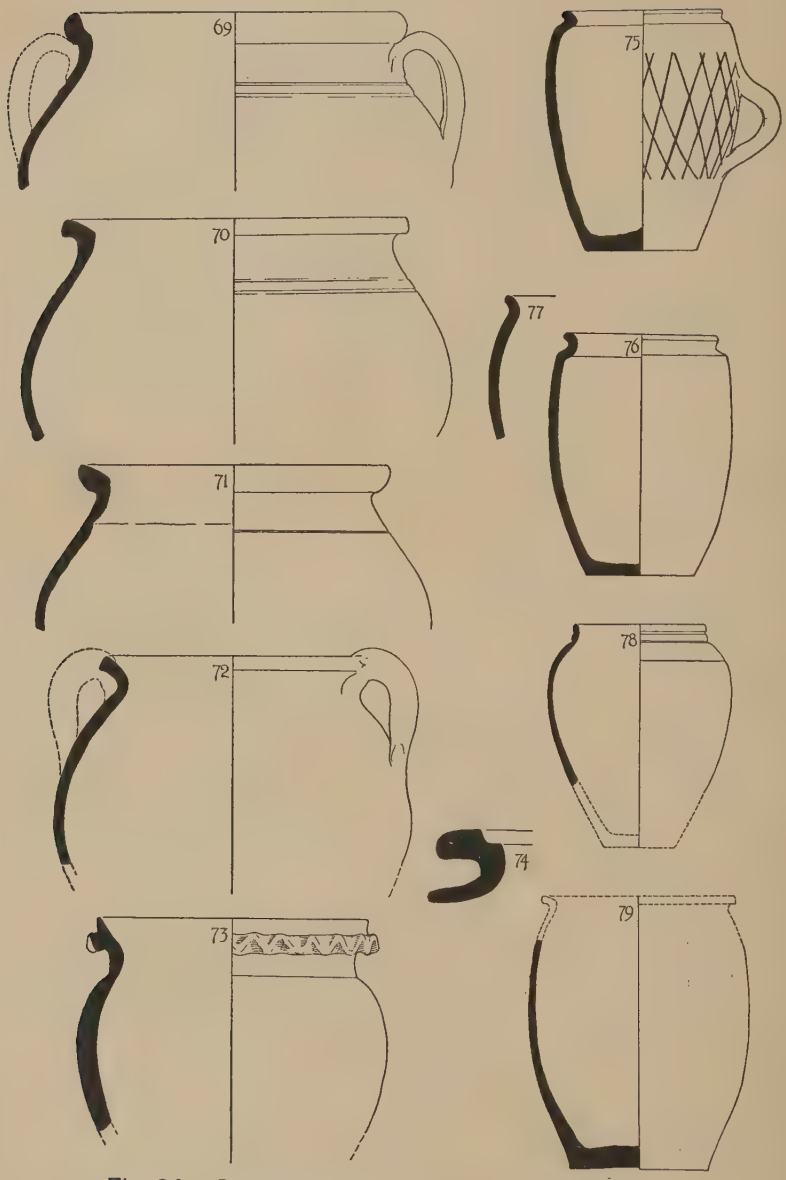



Fig. 64.—Coarse pottery: ollae, etc. (pp. 152-3). ¼.

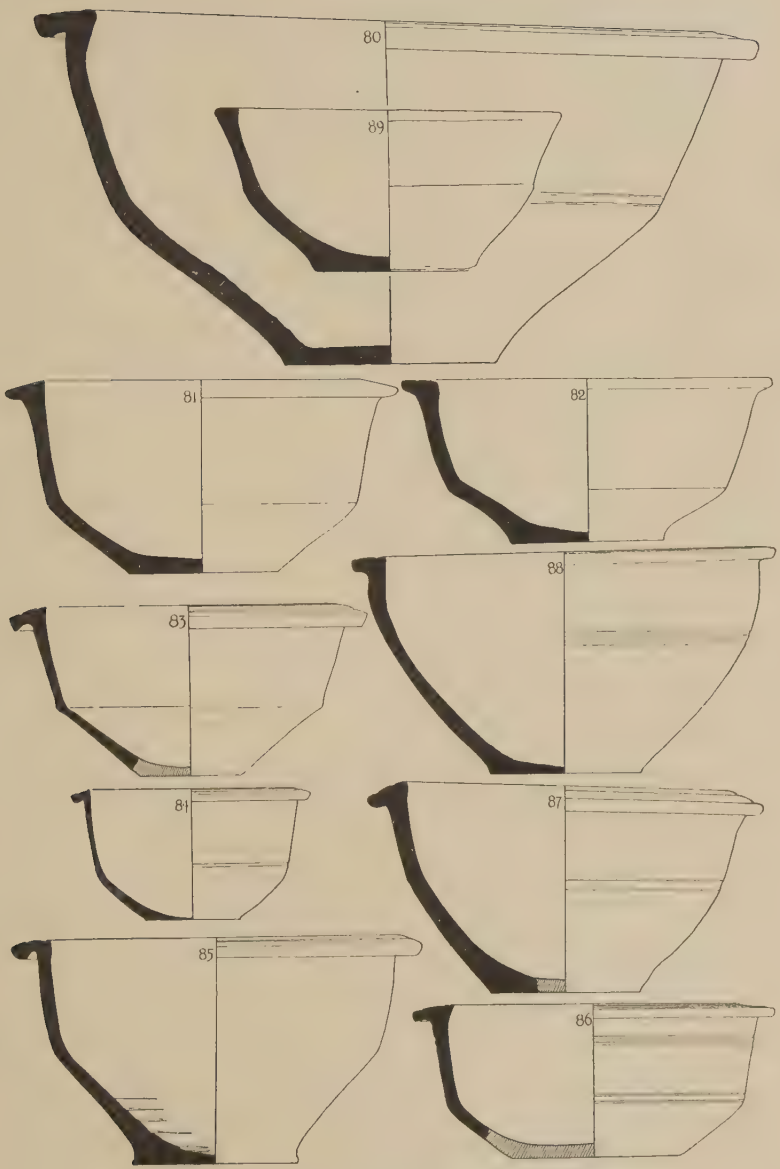



Fig. 65.—Coarse pottery: bowls (pp. 153-4.) ¼.

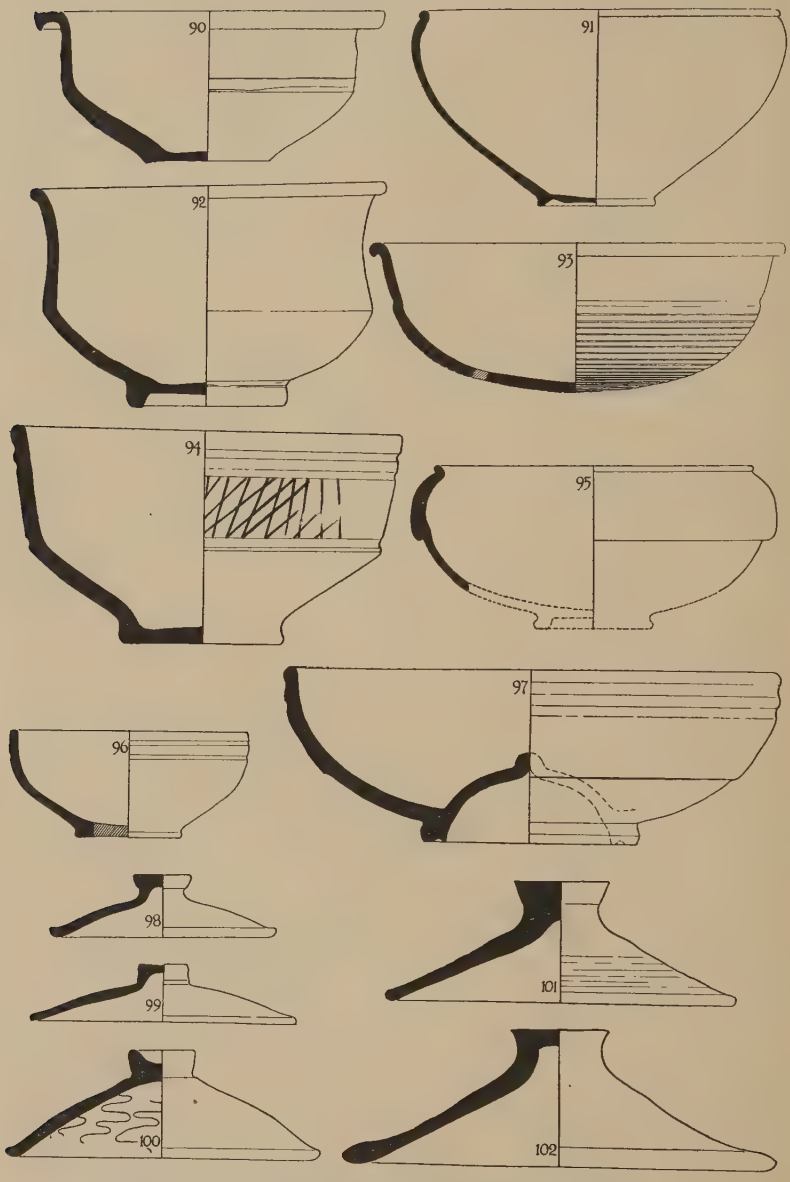



Fig. 66.—Coarse pottery: bowls and lids (pp. 154-5). ¼.

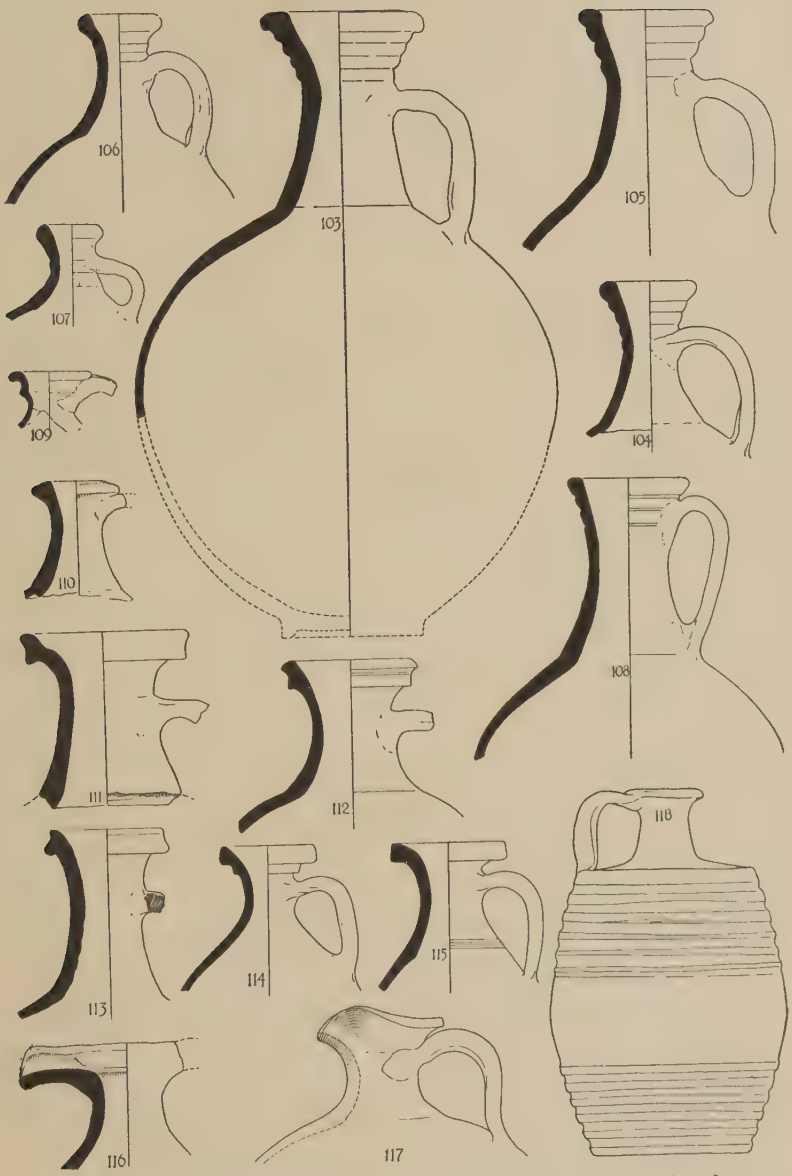



Fig. 67.—Coarse pottery: jugs, flagons, etc. (pp. 155-7). ¼.

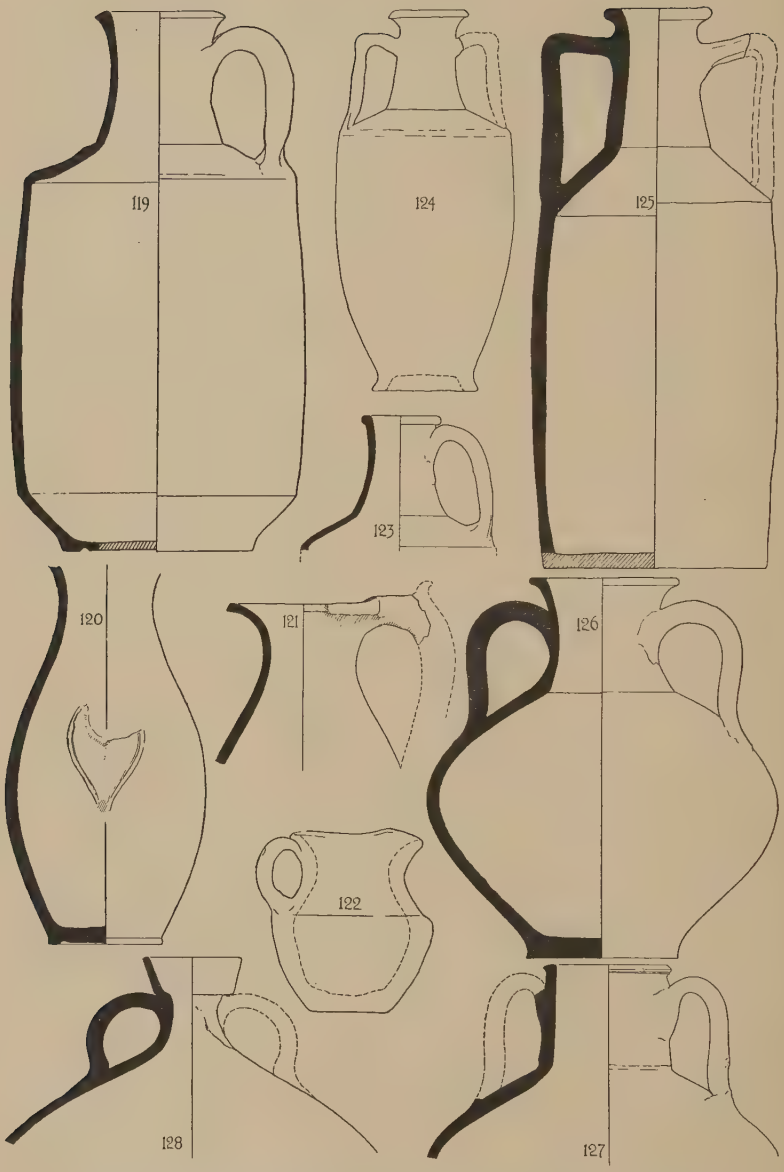



Fig. 68.—Coarse pottery: jugs, flagons, etc. (pp. 157-9). $\frac{1}{4}$.

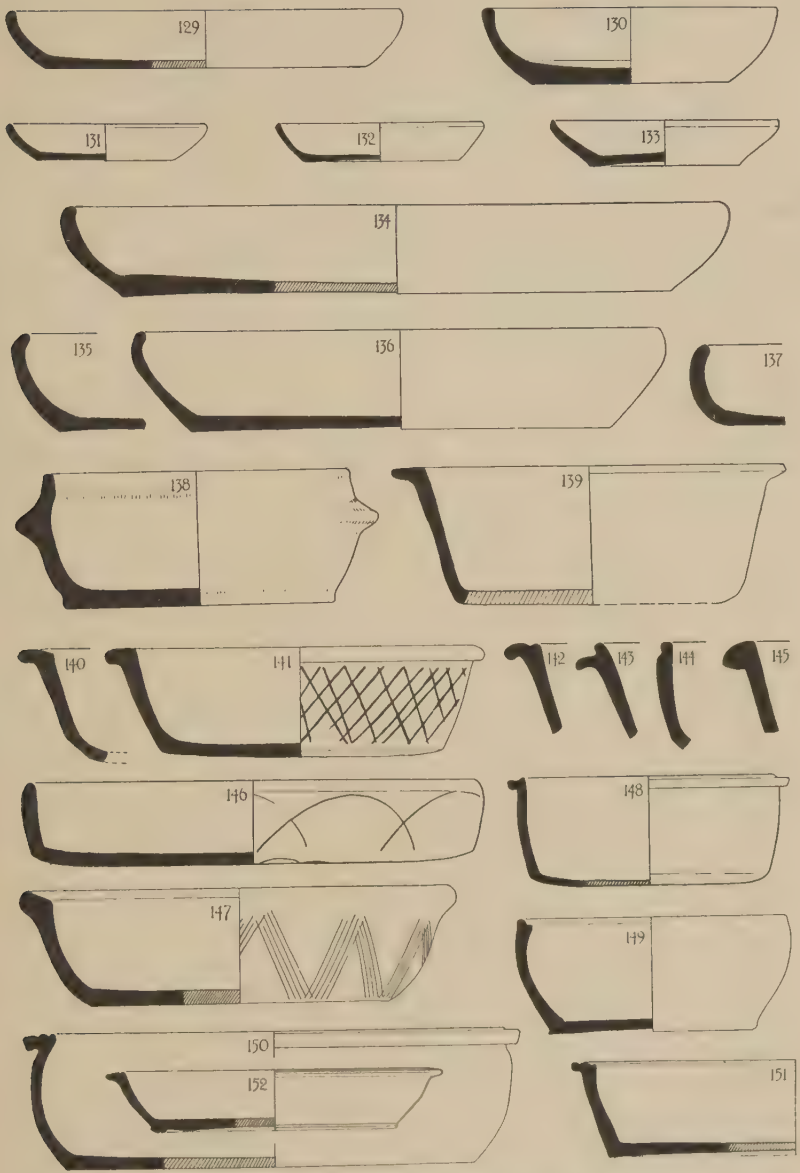



Fig. 69.—Coarse pottery: plates, dishes, etc. (pp. 159-61). ¼.

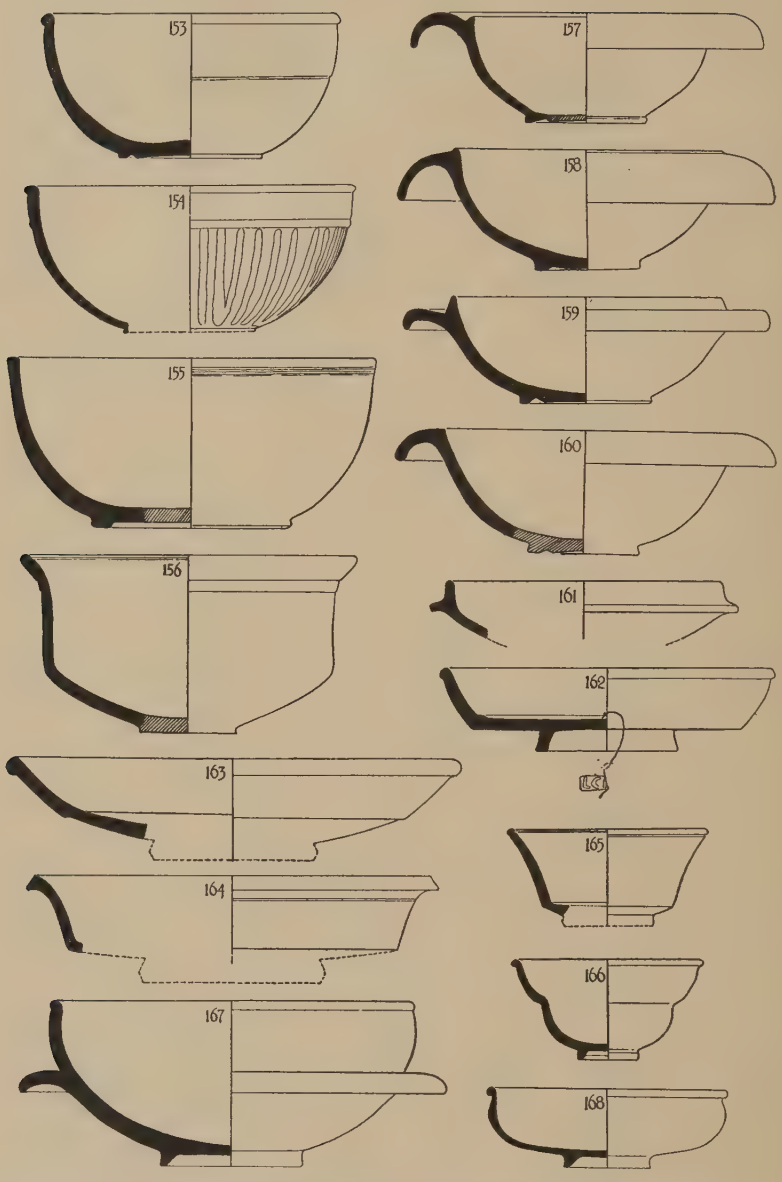



Fig. 70.—Coarse pottery: imitations of Samian forms (pp. 161-3). ¼.

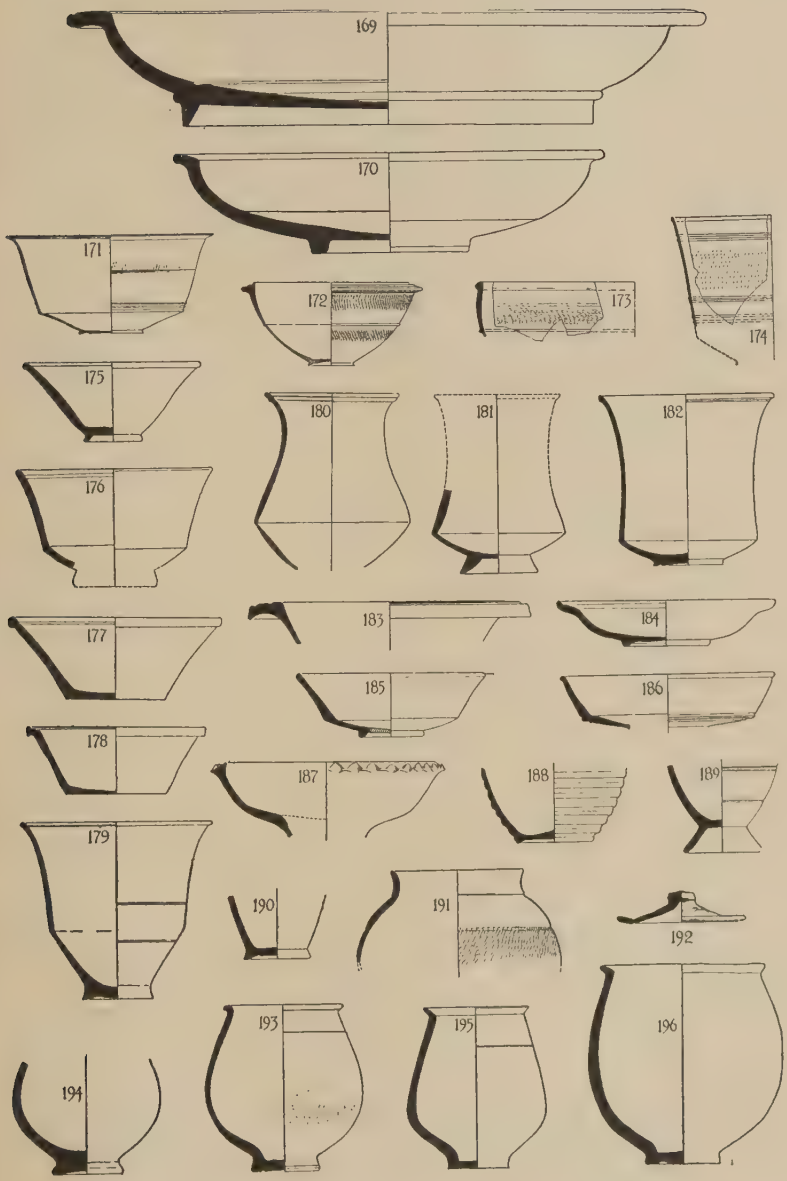



Fig. 71.—Coarse pottery: miscellaneous forms (pp. 163-7). ¼.

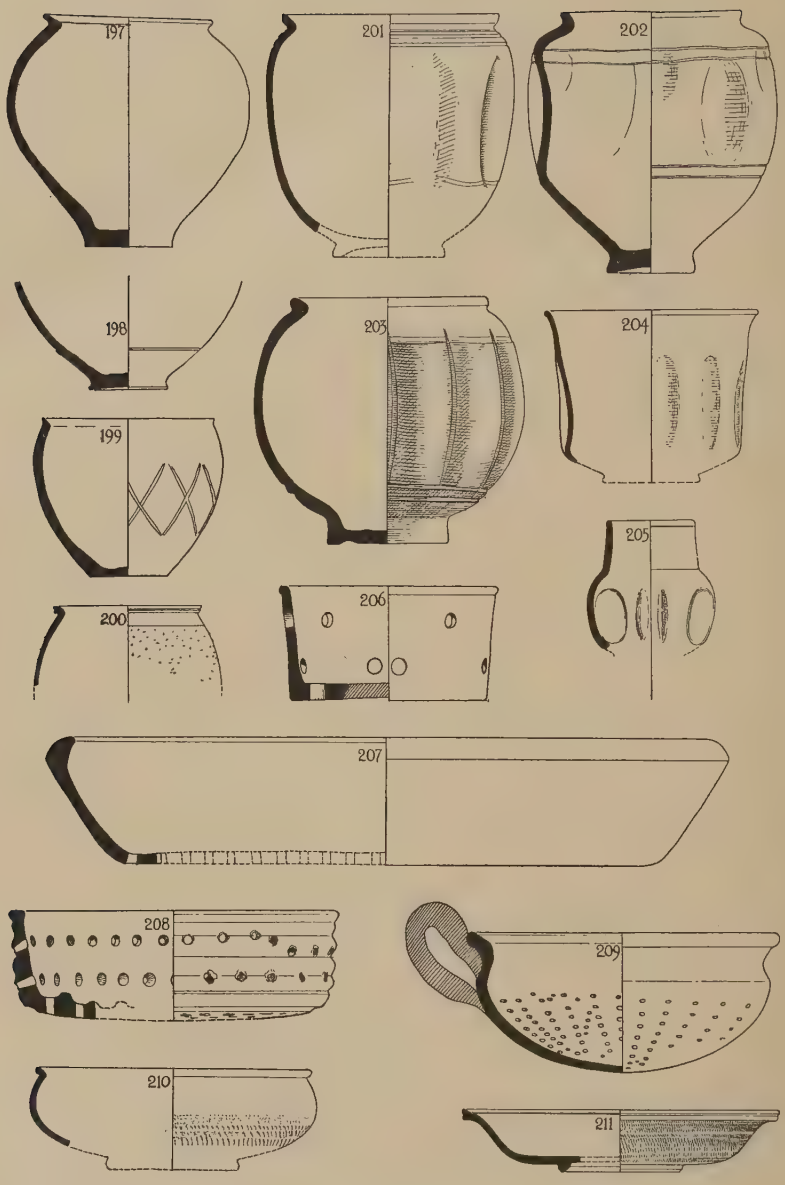



Fig. 72.—Coarse pottery: miscellaneous forms (pp. 167-8). $\frac{1}{4}$.

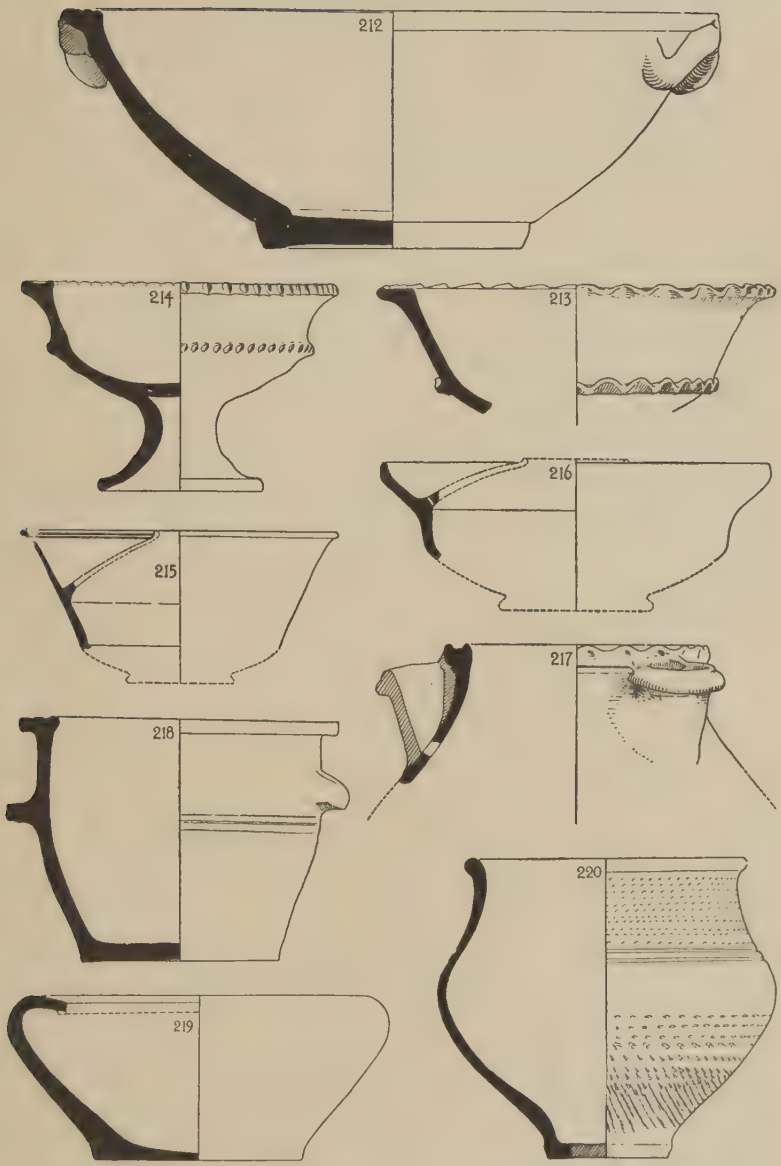



Fig. 73.—Coarse pottery: miscellaneous forms (pp. 168-70). ¼.

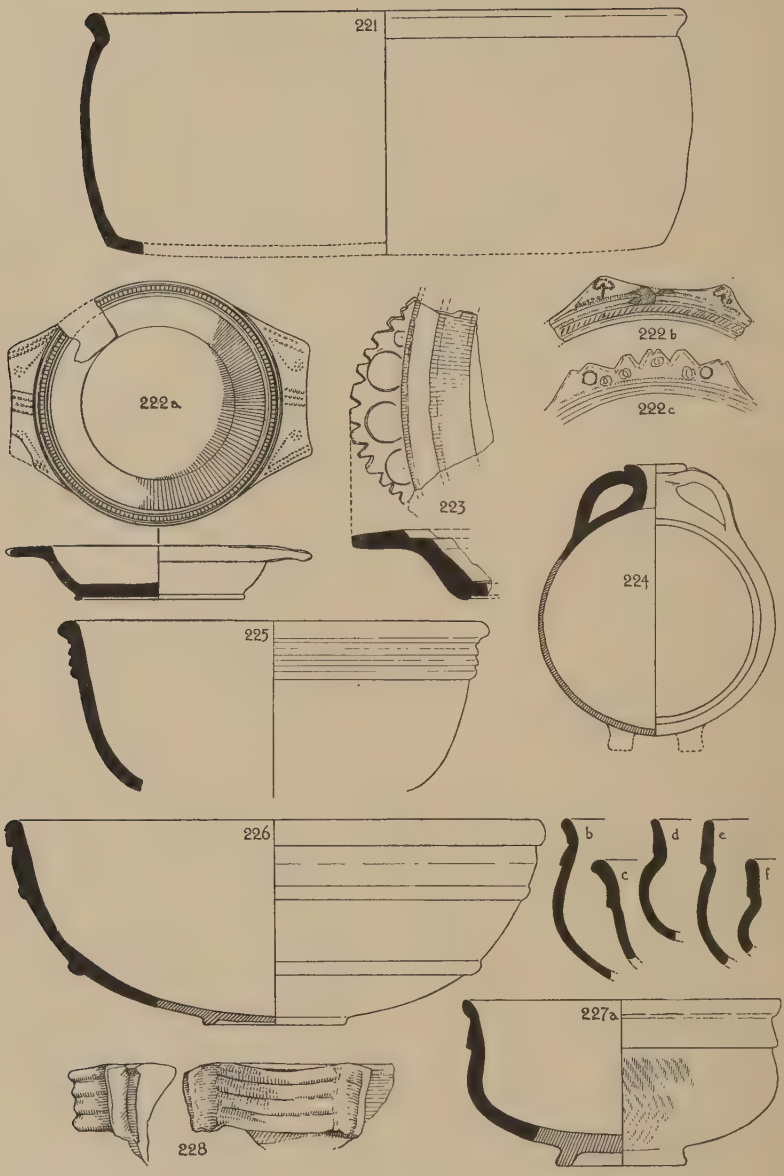



Fig. 74.—Coarse pottery: miscellaneous forms (pp. 170-2). $\frac{1}{4}$.

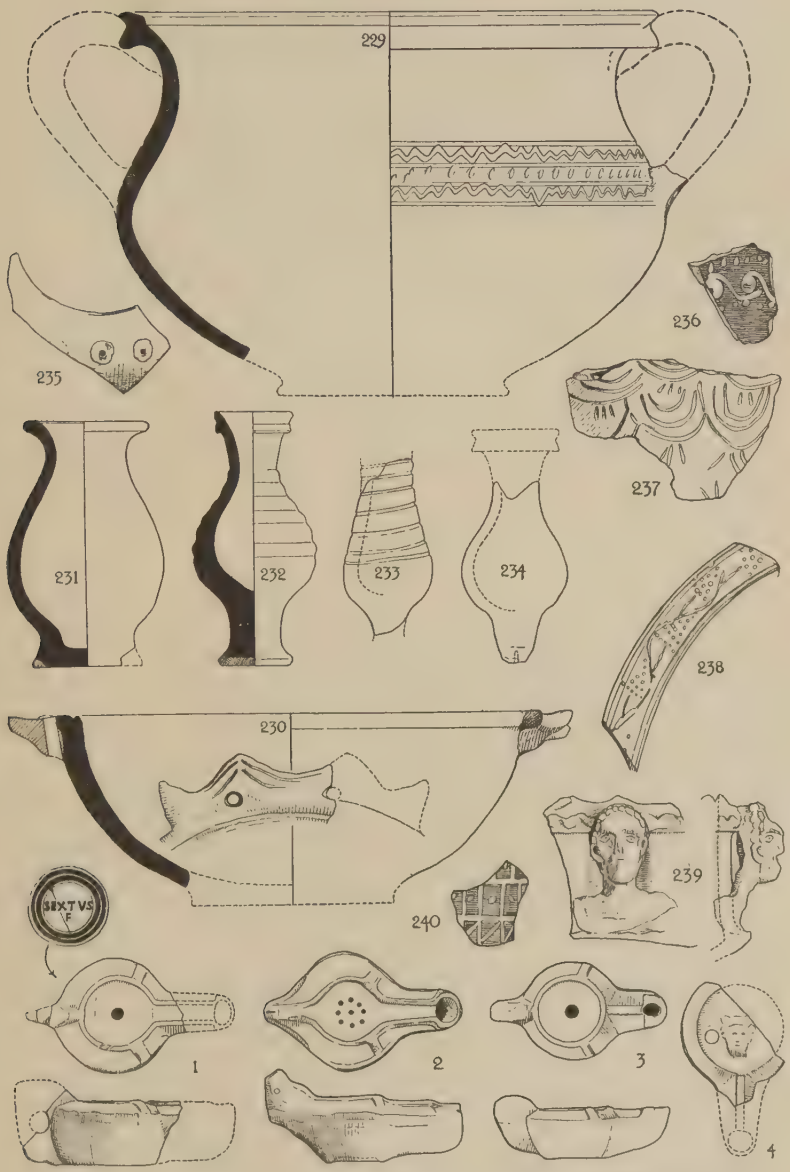



Fig. 75. - Coarse pottery: miscellaneous forms (pp. 172-4); and lamps (1-4, pp. 174-5). ¼.

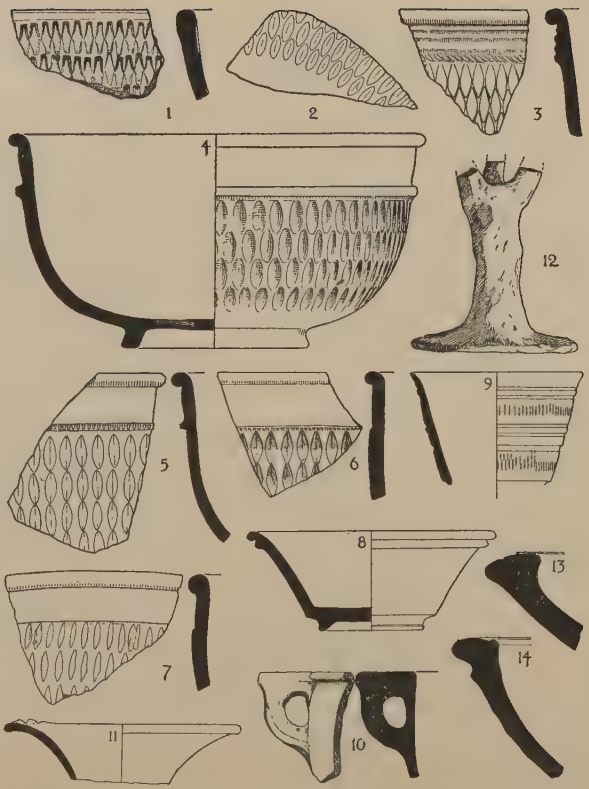



Fig. 76.—Green glazed and cut glass wares (pp. 177-8). ¼.

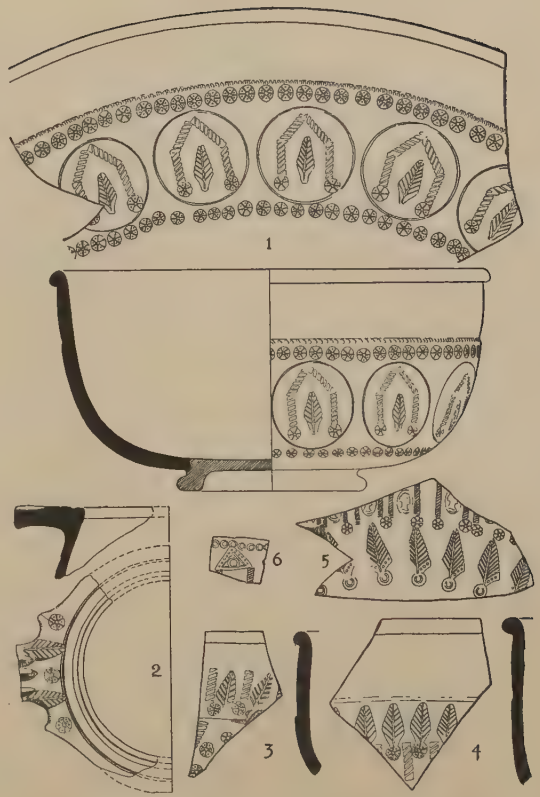



Fig. 77.—Stamped Ware (p. 181). ¼

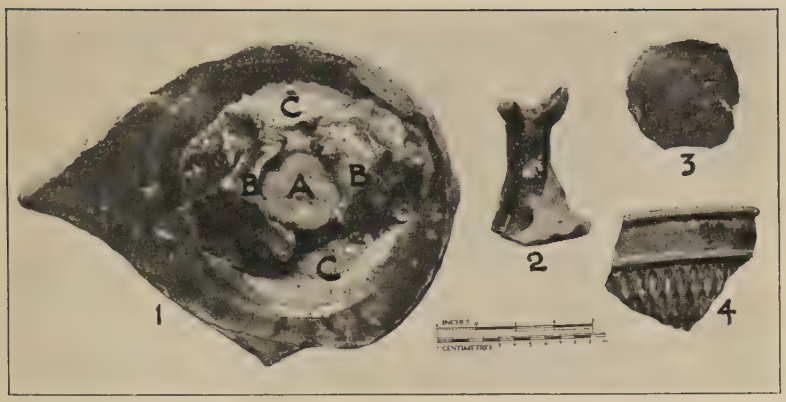
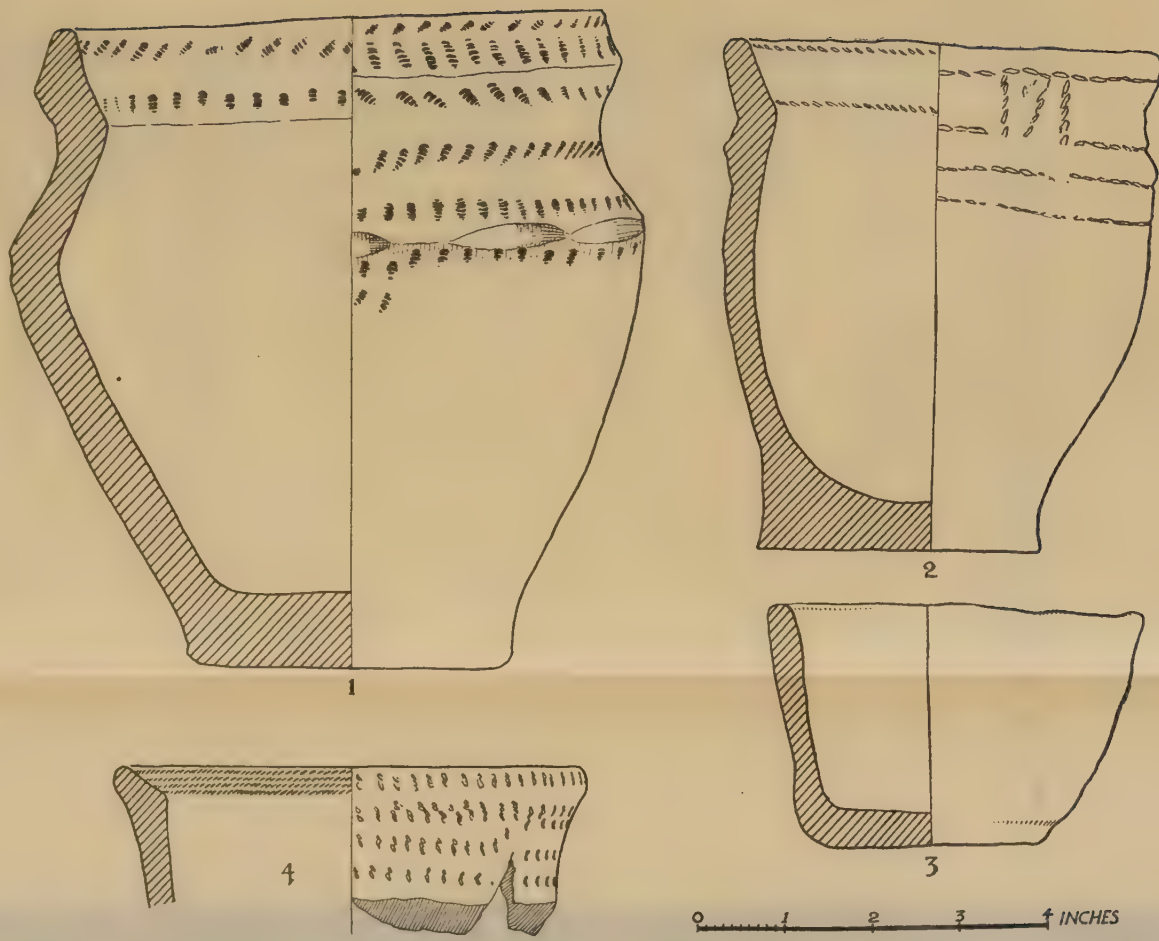


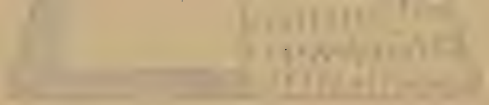

Fig. 78.—The firing of green-glazed ware.
(The pieces on which the reconstruction shown in the frontispiece is based. See p. 182.)

Fig. 79. – The use of kiln-pads in the stacking of mortaria (p. 183).
*To face p. 228.*




*To face p. 228.*

Fig. 80.—Vessels from the Bronze Age Burial (p. 187).



# INDEX.

NOTE—In the index, sections I.—IV. (part 1) only are dealt with in detail; part 2 of section IV. (List of Pottery Sites) is omitted as being conveniently arranged for reference; and only the main points of section V., the catalogue of finds, are incorporated.

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